CCD-TRV128/TRV228/TRV228E/TRV328/TRV428/TRV428E
RMT-833

SERVICE MANUAL

Ver 1.1 2005.06
Revision History

How to use Acrobat Reader

Photo: CCD-TRV328

US Model
Canadian Model
CCD-TRV128/TRV328
AEP Model
East European Model
North European Model
CCD-TRV228E/TRV428E
UK Model
CCD-TRV228E
E Model
CCD-TRV128/TRV228/TRV228E/TRV328/TRV428E
Australian Model
Hong Kong Model
CCD-TRV428E
Argentine Model
Brazilian Model
CCD-TRV128
Tourist Model
CCD-TRV428/TRV428E

M2100/M2101 MECHANISM

Link

SPECIFICATIONS	BLOCK DIAGRAMS	PRINTED WIRING BOARDS
SERVICE NOTE	FRAME SCHEMATIC DIAGRAMS	REPAIR PARTS LIST
DISASSEMBLY	SCHEMATIC DIAGRAMS	

NTSC MODEL: CCD-TRV128/TRV228/TRV328/TRV428
PAL MODEL: CCD-TRV228E/TRV428E

- For ADJUSTMENTS (SECTION 6), refer to SERVICE MANUAL, ADJ (987629051.pdf).
- INSTRUCTION MANUAL is shown at the end of this document.
- For MECHANISM ADJUSTMENTS, refer to the “8mm Video MECHANICAL ADJUSTMENT MANUAL IX M2000 MECHANISM ” (9-929-861-11).
- Reference No. search on printed wiring boards is available.
- Table for differences of function of each model.
- TO TAKE OUT A CASSETTE WHEN NOT EJECT (FORCE EJECT)
- When the machine needs to be repaired, make sure to follow the items of “LCD TYPE CHECK”.
- HELP: Sheet attachment positions and procedures of processing the flexible boards/harnesses are shown.

video Hi8 VIDEO CAMERA RECORDER

SONY

Self Diagnosis Supported model HANDYCAM Hi8 InfoLITHIUM M SERIES

SPECIFICATIONS

Video camera recorder

System

Video recording system
2 rotary heads, Helical scanning FM system
Audio recording system
Rotary heads, FM system
Video signal
CCD-TRV228E/428E:
PAL color, CCIR standards
CCD-TRV128/228/328/428:
NTSC color, EIA standards
Usable cassette
8 mm video format cassette
Tape speed
CCD-TRV228E/428E:
SP: Approx. 20.05 mm/s
LP: Approx. 10.06 mm/s
CCD-TRV128/228/328/428:
SP: Approx. 14.35 mm/s
LP: Approx. 7.19 mm/s
Recording/playback time (using 90 min. Hi8/Digital8 video cassette)
CCD-TRV228E/428E:
SP: 1 h 30 min
LP: 3 h
Recording/playback time (using 120 min. Hi8/Digital8 video cassette)
CCD-TRV128/228/328/428:
SP: 2 h
LP: 4 h
Fast forward/rewind time (CCD-TRV228E/428E: using 90 min. Hi8/Digital8 video cassette) (CCD-TRV128/228/328/428: using 120 min. Hi8/Digital8 video cassette)
Approx. 5 min
Viewfinder
Electric viewfinder (monochrome)
Image device
CCD-TRV228E/428E:
3.0 mm (1/6 type) CCD (Charge Coupled Device)
Gross: Approx. 380 000 pixels
Effective: Approx. 230 000 pixels
CCD-TRV128/228/328/428:
3.0 mm (1/6 type) CCD (Charge Coupled Device)
Gross: Approx. 320 000 pixels
Effective: Approx. 200 000 pixels
Lens
Combined power zoom lens
Filter diameter: 37 mm (1 1/2 in.)
20 × (Optical), 990 × (Digital)
F=1.6 - 2.4
Focal length
2.5 - 50 mm (1/8 - 2 in.)
When converted to a 35 mm still camera
42 - 840 mm (1 11/16 - 33 1/8 in.)
Color temperature
Auto
Minimum illumination
1 lx (lux) (F 1.6)
0 lx (lux) (in the NightShot plus mode)*
* Objects unable to be seen due to the dark can be shot with infrared lighting.

Input/Output connectors

S video output
4-pin mini DIN
Luminance signal: 1 Vp-p, 75 Ω (ohms), unbalanced
CCD-TRV228E/428E:
Chrominance signal: 0.3 Vp-p, 75 Ω (ohms), unbalanced
CCD-TRV128/228/328/428:
Chrominance signal: 0.286 Vp-p, 75 Ω (ohms), unbalanced
Audio/Video output
AV MINIJACK
Video signal: 1 Vp-p, 75 Ω (ohms), unbalanced, sync negative
Audio signal: 327 mV (at output impedance more than 47 kΩ (kilohms)), Output impedance with less than 2.2 kΩ (kilohms)
Monaural minijack (ø 3.5 mm)
RFU DC OUT
Mini-minijack (ø 2.5 mm), DC5V

LCD screen

Picture
6.2 cm (2.5 type)
Total dot number
123 200 (560 × 220)

General

Power requirements
DC 7.2 V (battery pack)
DC 8.4 V (AC Adaptor)
Average power consumption (when using the battery pack)
During camera recording using the viewfinder
1.8 W
During camera recording using the LCD
2.7 W
Operating temperature
0°C to 40°C (32°F to 104°F)
Storage temperature
-20°C to + 60°C (-4°F to + 140°F)
Dimensions (approx.)
85 × 98 × 151 mm (3 3/8 × 3 7/8 × 6 in.) (w/h/d)
Mass (Approx.)
780 g (1 lb 11 oz) main unit only
890 g (1 lb 15 oz) including the NP-FM30 rechargeable battery pack, Hi8/Digital8 cassette, lens cap, and shoulder strap
Supplied accessories
AC Adaptor (1)
Power cord (1)
Lens cap (1)
Shoulder strap (1)
Wireless Remote Commander (1)
RMT-833: (CCD-TRV228/228E/428/428E)
A/V connecting cable (1)
Rechargeable battery pack NP-FM30 (1)
21-pin adaptor (1): (AEP, UK, EE, NE)
Camera Operations Guide (This manual) (1)
See page 5-23.

AC Adaptor AC-L15A/L15B

Power requirements
AC 100 - 240 V, 50/60 Hz
Current consumption
0.35 - 0.18 A
Power consumption
18 W
Output voltage
DC 8.4 V, 1.5 A
Operating temperature
0°C to 40°C (32°F to 104°F)
Storage temperature
-20°C to + 60°C (-4°F to + 140°F)
Dimensions (approx.)
56 × 31 × 100 mm (2 1/4 × 1 1/4 × 4 in.) (w/h/d) excluding the projecting parts
Mass (approx.)
190 g (6.7 oz) excluding the mains lead

Rechargeable battery pack (NP-FM30)

Maximum output voltage
DC 8.4 V
Output voltage
DC 7.2 V
Capacity
5.0 Wh (700 mAh)
Dimensions (approx.)
38.2 × 20.5 × 55.6 mm
(1 9/16 × 13/16 × 2 1/4 in.) (w/h/d)
Mass (approx.)
65 g (2.3 oz)
Operating temperature
0°C to 40°C (32°F to 104°F)
Type
Lithium ion

Design and specifications are subject to change without notice.

Table for differences of function

Model	CCD-TRV128	CCD-TRV228	CCD-TRV228E	CCD-TRV328	CCD-TRV428	CCD-TRV428E
Destination	US, CND, E, AR, BR	E	AEP, UK, EE, NE, E	US, CND, E	JE	AEP, EE, NE, E, AUS, HK, JE
Remote commander	×	○	○	×	○	○
Color system	NTSC	NTSC	PAL	NTSC	NTSC	PAL
Mechanism deck	M2100	M2100	M2101	M2100	M2100	M2101
SteadyShot	×	×	×	○	○	○
LCD type	Please refer to page 1-3 to discriminate the type of LCD (TYPE C or TYPE S).					

- Abbreviation
  AR : Argentine model
  AUS : Australian model
  BR : Brazilian model
  CND : Canadian model
  EE : East European model
  HK : Hong Kong model
  JE : Tourist model
  NE : North European model

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈSES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPÉMENTS PUBLIÉS PAR SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, through functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit Board Repairing
   - Keep the temperature of the soldering iron around 270˚C during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

Unleaded solder

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead.
(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)

: LEAD FREE MARK

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40°C higher than ordinary solder.
  Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.
  Soldering irons using a temperature regulator should be set to about 350°C.
  Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity
  Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder
  It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

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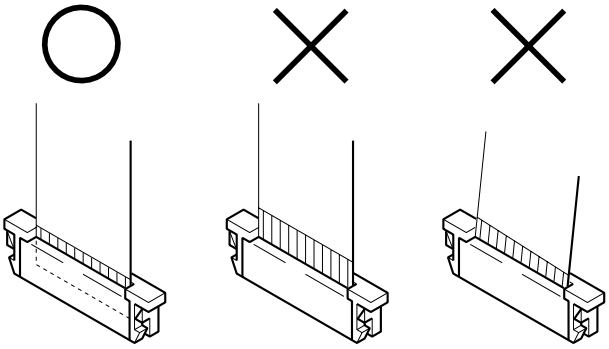
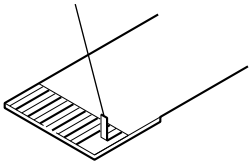
SECTION 1
SERVICE NOTE

1-1. NOTE FOR REPAIR

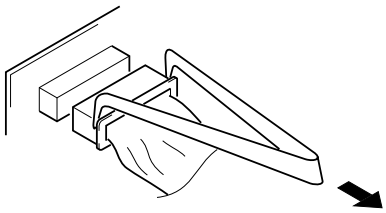
Make sure that the flat cable and flexible board are not cracked of bent at the terminal.
Do not insert the cable insufficiently nor crookedly.



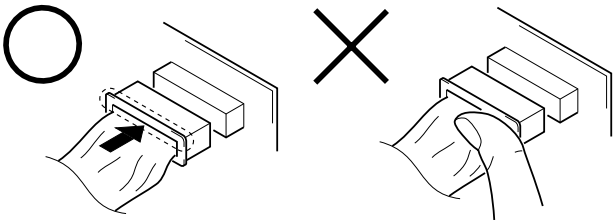
Cut and remove the part of gilt which comes off at the point. (Be careful or some pieces of gilt may be left inside)



When remove a connector, don't pull at wire of connector.
It is possible that a wire is snapped.



When installing a connector, don't press down at wire of connector.
It is possible that a wire is snapped.



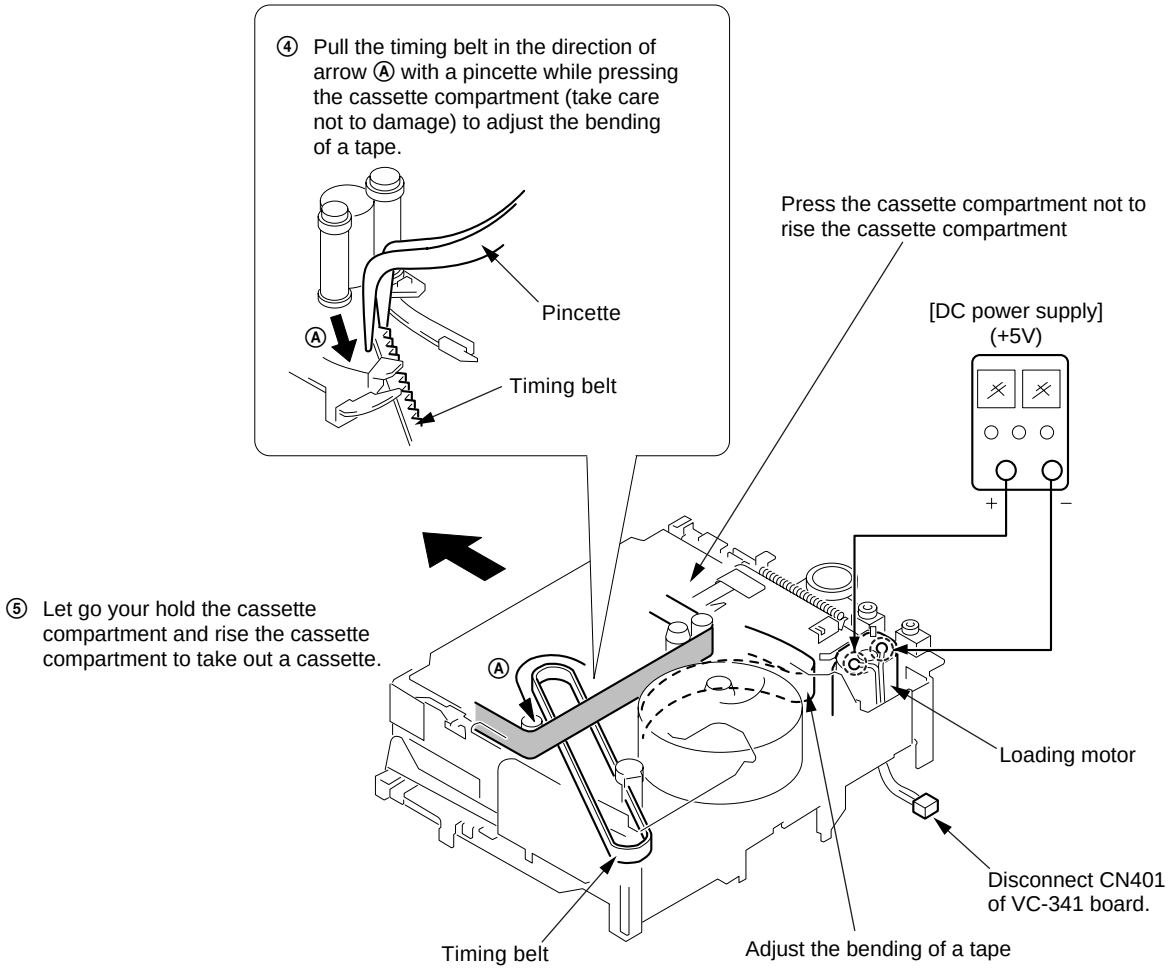
1-2. POWER SUPPLY DURING REPAIRS

In this unit, about 10 seconds after power is supplied to the battery terminal using the regulated power supply (8.4V), the power is shut off so that the unit cannot operate.
The following method is available to prevent this.

Method 1.
Use the AC power adaptor (AC-L10, AC-VQ800 etc.).

1-3. TO TAKE OUT A CASSETTE WHEN NOT EJECT (FORCE EJECT)

① Refer to “SECTION 2. DISASSEMBLY” to remove the mechanism deck block.
② Disconnect CN401 (2P) of VC-341 board.
③ Add +5V from the DC POWER SUPPLY and unload with a pressing the cassette compartment.


④ Pull the timing belt in the direction of arrow Ⓐ with a pincette while pressing the cassette compartment (take care not to damage) to adjust the bending of a tape.
Pincette
Timing belt
Press the cassette compartment not to rise the cassette compartment
[DC power supply]
(+5V)
+
−
⑤ Let go your hold the cassette compartment and rise the cassette compartment to take out a cassette.
Loading motor
Disconnect CN401 of VC-341 board.
Timing belt
Adjust the bending of a tape

1-4. LCD TYPE CHECK

The LCD type can be checked with data value by connecting the adjustment remote commander.
Note: About PD-204 board and LCD module, discriminate LCD type on the machine, and replace the same type.

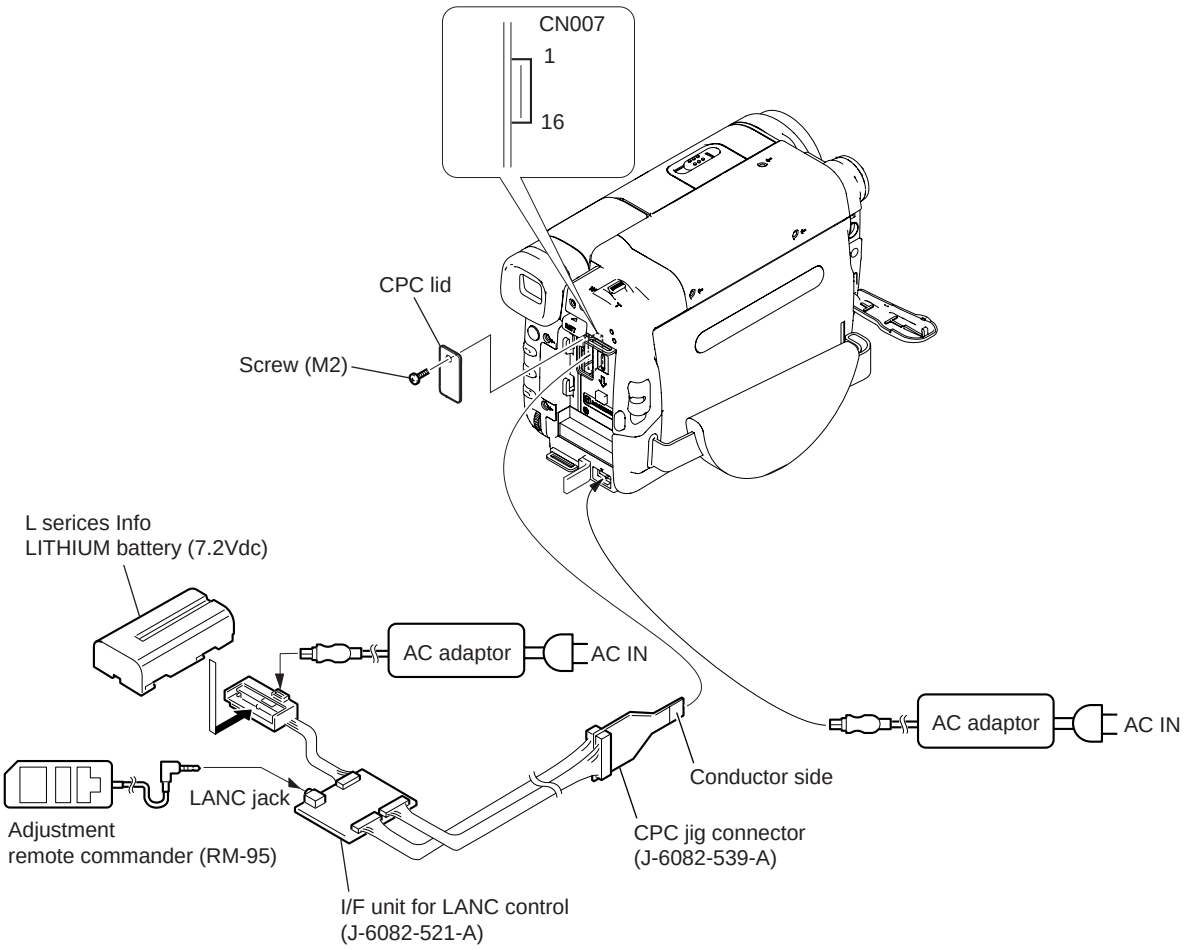
Preparations:

1) Connect the equipment for adjustments according to Fig. 1.
2) Connect the adjustment remote commander to VC-341 board CN007 via I/F unit for LANC control (J-6082-521-A) and CPC jig connector (J-6082-539-A).
   To operate the adjustment remote commander, connect the AC power adaptor to the DC IN jack of I/F unit for LANC control, or connect the L series Info-LITHIUM battery to the battery terminal of I/F unit for LANC control.

Checking method:

1) Select page: 3, address: CC.
2) By checking the data value of display data, the type of LCD can be discriminated.

Data	LCD type
64 to 67	TYPE C
40 to 43	TYPE S



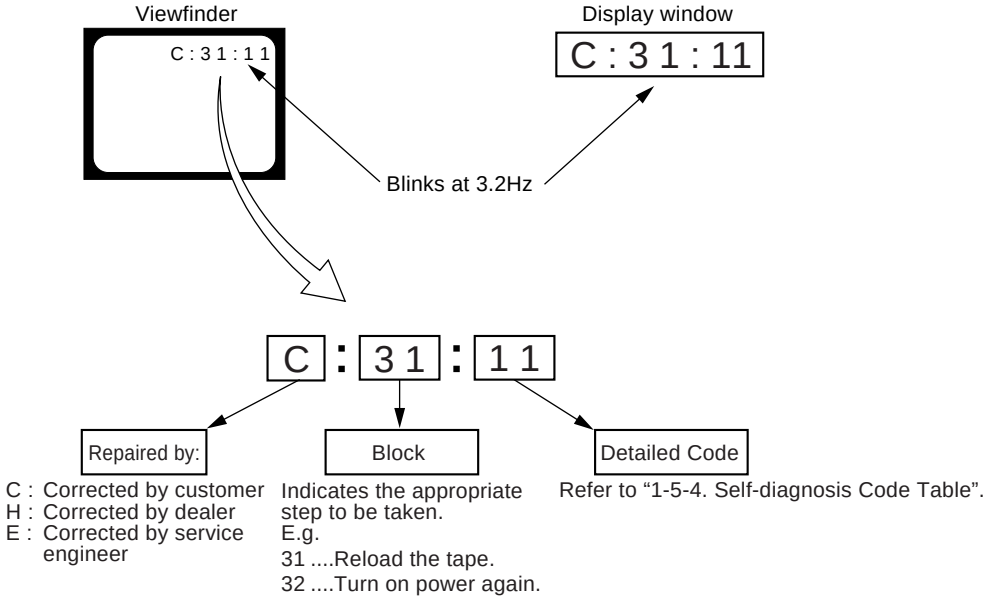
1-5. SELF-DIAGNOSIS FUNCTION

1-5-1. Self-diagnosis Function

When problems occur while the unit is operating, the self-diagnosis function starts working, and displays on the viewfinder or Display window what to do. This function consists of two display; self-diagnosis display and service mode display.
Details of the self-diagnosis functions are provided in the Instruction manual.

1-5-2. Self-diagnosis Display

When problems occur while the unit is operating, the counter of the viewfinder or Display window shows a 4-digit display consisting of an alphabet and numbers, which blinks at 3.2 Hz. This 5-character display indicates the “repaired by:”, “block” in which the problem occurred, and “detailed code” of the problem.

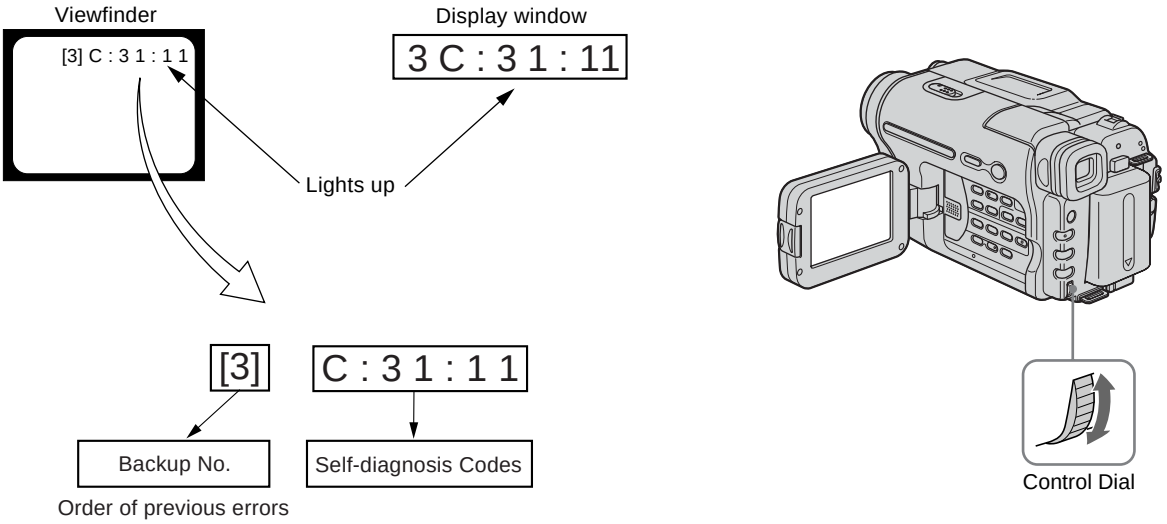

Viewfinder
C : 3 1 : 1 1
Display window
C : 3 1 : 11
Blinks at 3.2Hz
C : 31 : 11
Repaired by:
Block
Detailed Code
C : Corrected by customer
H : Corrected by dealer
E : Corrected by service engineer
Indicates the appropriate step to be taken.
E.g.
31 ....Reload the tape.
32 ....Turn on power again.
Refer to “1-5-4. Self-diagnosis Code Table”.

1-5-3. Service Mode Display

The service mode display shows up to six self-diagnosis codes shown in the past.

1. Display Method

While pressing the “STOP” key, set the switch from OFF to “ON”, and continue pressing the “STOP” key for 5 seconds continuously. The service mode will be displayed, and the counter will show the backup No. and the 5-character self-diagnosis codes.



2. Switching of Backup No.

By rotating the control dial, past self-diagnosis codes will be shown in order. The backup No. in the [] indicates the order in which the problem occurred. (If the number of problems which occurred is less than 6, only the number of problems which occurred will be shown.)
[1] : Occurred first time [3] : Occurred third time [5] : Occurred fifth time
[2] : Occurred second time [4] : Occurred fourth time [6] : Occurred the last time

3. End of Display

Turning OFF the power supply will end the service mode display.

Note: The “self-diagnosis display” data will not be erased (reset), when the lithium battery (CONTROL KEY BLOCK (CF-5100): BT001) is removed.

1-5-4. Self-diagnosis Code Table

Self-diagnosis Code					Symptom/State	Correction
Repaired by:	Block Function		Detailed Code			
C	0	4	0	0	Non-standard battery is used.	Use the InfoLITHIUM battery.
C	2	1	0	0	Condensation.	Remove the cassette, and insert it again after one hour.
C	2	2	0	0	Video head is dirty.	Clean with the optional cleaning cassette.
C	3	1	1	0	LOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	3	1	1	1	UNLOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	3	1	2	0	T reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.
C	3	1	2	1	S reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.
C	3	1	2	2	T reel fault.	Load the tape again, and perform operations from the beginning.
C	3	1	2	3	S reel fault.	Load the tape again, and perform operations from the beginning.
C	3	1	3	0	FG fault when starting capstan.	Load the tape again, and perform operations from the beginning.
C	3	1	3	1	FG fault during normal capstan operations.	Load the tape again, and perform operations from the beginning.
C	3	1	4	0	FG fault when starting drum.	Load the tape again, and perform operations from the beginning.
C	3	1	4	1	PG fault when starting drum.	Load the tape again, and perform operations from the beginning.
C	3	1	4	2	FG fault during normal drum operations.	Load the tape again, and perform operations from the beginning.
C	3	1	4	3	PG fault during normal drum operations.	Load the tape again, and perform operations from the beginning.
C	3	1	4	4	Phase fault during normal drum operations.	Load the tape again, and perform operations from the beginning.
C	3	2	1	0	LOAD direction loading motor time-out.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	1	1	UNLOAD direction loading motor time-out.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	0	T reel side tape slacking when unloading.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	1	S reel side tape slacking when unloading.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	2	T reel fault.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	3	S reel fault.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	3	0	FG fault when starting capstan.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	3	1	FG fault during normal capstan operations.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	0	FG fault when starting drum.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	1	PG fault when starting drum.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	2	FG fault during normal drum operations.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	3	PG fault during normal drum operations.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	4	Phase fault during normal drum operations.	Remove the battery or power cable, connect, and perform operations from the beginning.

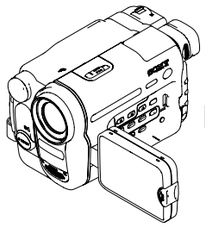
Self-diagnosis Code			Symptom/State	Correction
Repaired by:	Block Function	Detailed Code		
E	6 1	0 0	Difficult to adjust focus (Cannot initialize focus.)	Inspect the lens block focus reset sensor (Pin ⑫ of CN201 of VC-341 board) when focusing is performed when the control dial is rotated in the focus manual mode and the focus motor drive circuit (IC201 of VC-341 board) when the focusing is not performed.
E	6 1	1 0	Zoom operations fault (Cannot initialize zoom lens.)	Inspect the lens block zoom reset sensor (Pin ⑮ of CN201 of VC-341 board) when zooming is performed when the zoom switch is operated and the zoom motor drive circuit (IC201 of VC-341 board) when zooming is not performed.
E	6 2	0 0	Steadyshot function does not work well. (With pitch angular velocity sensor output stopped.)	Inspect pitch angular velocity sensor (SE752 of SI-039 board) peripheral circuits. *1
E	6 2	0 1	Steadyshot function does not work well. (With yaw angular velocity sensor output stopped.)	Inspect yaw angular velocity sensor (SE751 of SI-039 board) peripheral circuits. *1

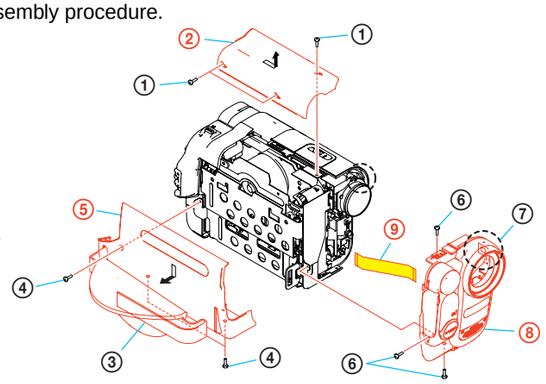
*1: STEADYSHOT model (CCD-TRV328/TRV428/TRV428E)

SECTION 2
DISASSEMBLY

2-1. FLOW CHART

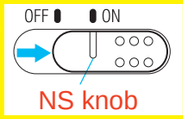
The following flow chart shows the disassembly procedure.

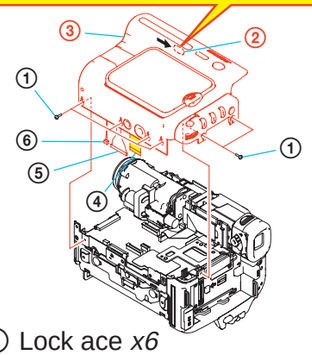




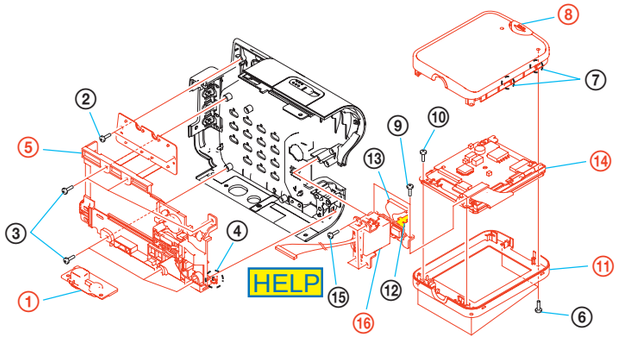
① Lock ace *x3*
② Cabi (upper)
③ Grip belt
④ Lock ace *x3*
⑤ Cabi (L)
⑥ Lock ace *x3*
⑦ Claw
⑧ Front panel
Note: Flexible board is connected.
⑨ FP-795: CN755, CN009

Note: When you remove Cabinet (R) Block, or when you assembly, please slide NS knob to the position of "ON".

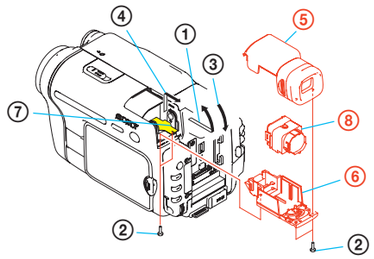




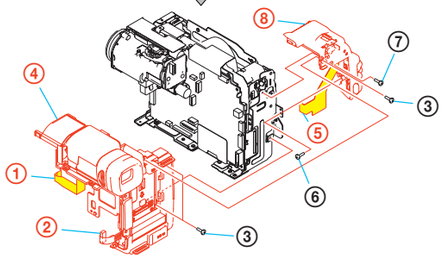
① Lock ace *x6*
② NS knob to the position of "ON".
③ Cabi (R)
④ VC-341: CN005
⑤ VC-341: CN002
⑥ VC-341: CN008



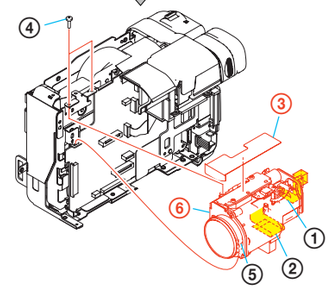
① Tripod Screw
② Tapping P2 *x2*
③ Tapping P2 *x6*
④ Claw
⑤ CF-5100
⑥ Tapping P2 *x4*
⑦ Claw *x2*
⑧ P Cabi (C)
⑨ Tapping P2 *x2*
⑩ Tapping P2 *x1*
⑪ P Cabi (M)
⑫ PD-204: CN6005
⑬ PD-204: CN6001
⑭ PD-204, LCD901, ND901
⑮ Tapping P2 *x4*
⑯ Hinge assy



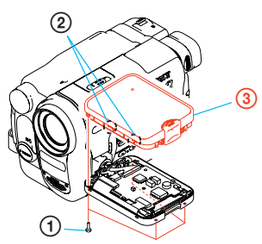
① Lift up the EVF.
② Tapping P2 *x4*
③ Down the EVF.
④ EVF block
⑤ EVF Cabi (upper)
⑥ EVF Cabi (lower)
⑦ FP-797: LCD902
⑧ EVF lens



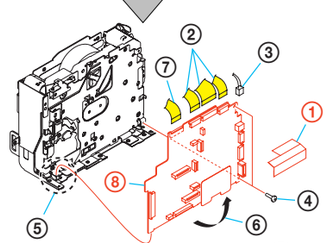
① VC-341: CN004
② VC-341: CN053
③ Lock ace *x3*
④ EVF/Battely panel block
⑤ VC-341: CN006
⑥ Tapping P2 *x1*
⑦ Lock ace *x1*
⑧ SS-5100



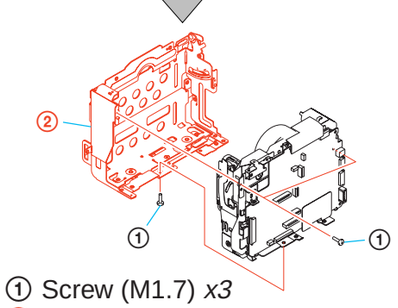
① VC-341: CN151
② VC-341: CN201
③ Lens sheet
④ Lock ace *x2*
⑤ Boss
⑥ Lens LSV-820A



① Tapping P2 *x4*
② Claw *x2*
③ P Cabi (C)

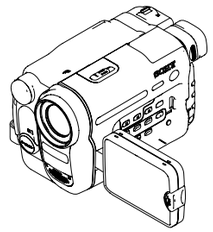


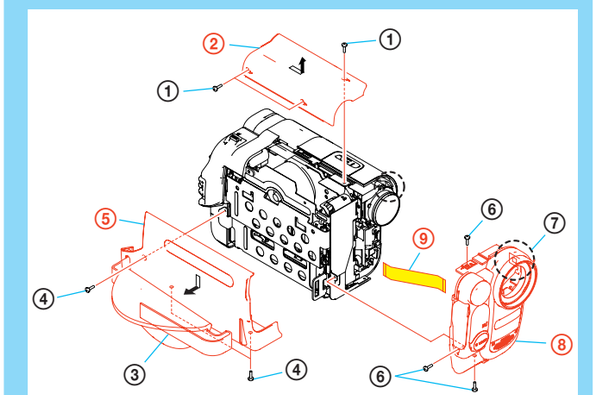
① VF blind sheet
② VC-341: CN402, CN403, CN481
③ VC-341: CN401
④ Screw (M1.7) *x2*
⑤ Claw
⑥ Open the VC-341.
⑦ VC-341: CN404
⑧ VC-341

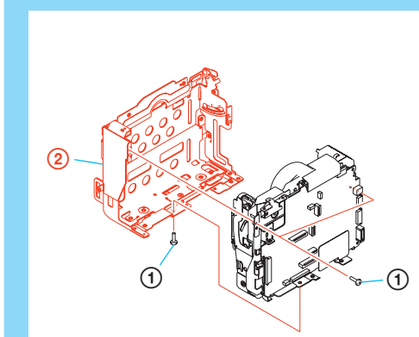


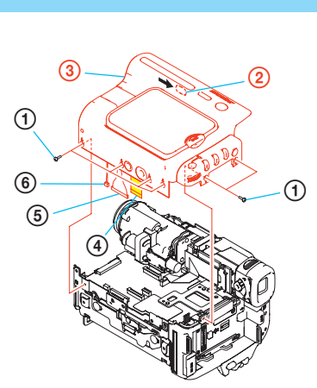
① Screw (M1.7) *x3*
② CS frame

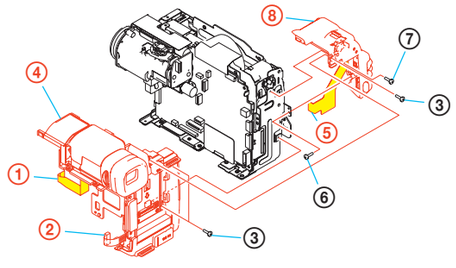
2-2. MECHANISM DECK SERVICE POSITION

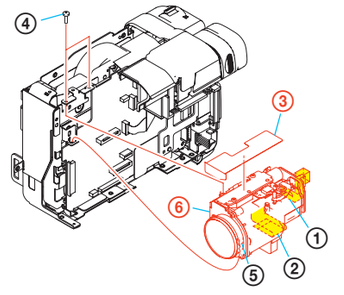












Connection to Check the Mechanism deck

To check the mechanism deck, set the Camera or VTR to the "Forced power ON" mode. (Or, connect the control key block (SS-5100) to the CN006 of VC-341 board and set the power switch to the "CAMERA" or "PLAY/edit" position.) Operate the Camera functions of the zoom and focus, the VTR function using the adjustment remote commander (with the HOLD switch set in the OFF position).

Setting the "Forced Camera Power ON" mode

1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 02 and press the PAUSE button of the adjustment remote commander.

Setting the "Forced VTR Power ON" mode

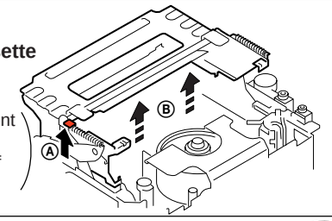
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 02 and press the PAUSE button of the adjustment remote commander.

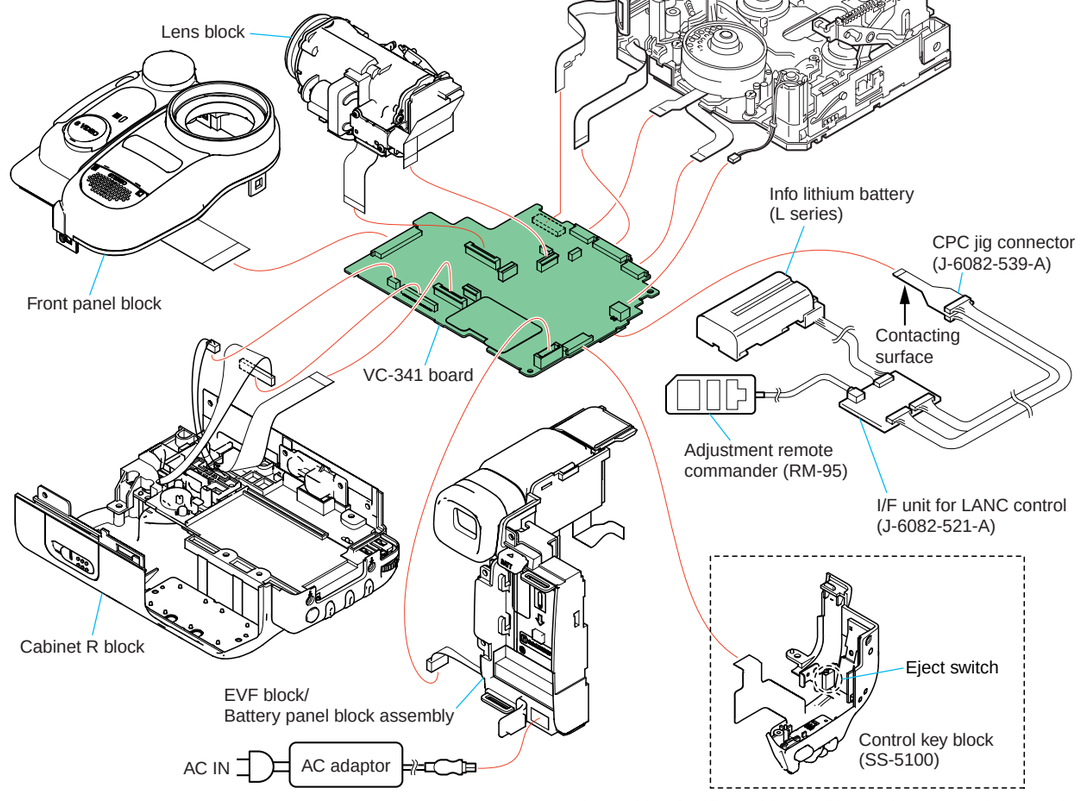
Exiting the "Forced Power ON" mode

1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, data: 00, and press the PAUSE button of the adjustment remote commander.
3) Select page: 0, address: 01, and set data: 00.

• How to move up the cassette compartment manually

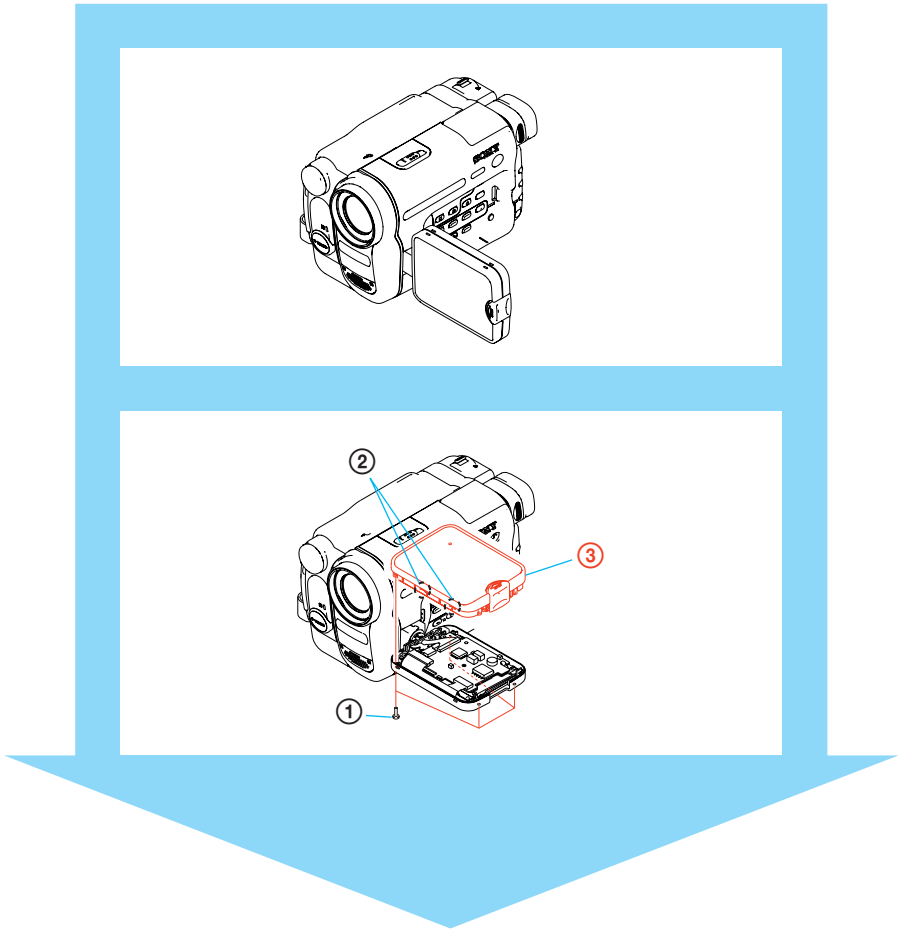
Press the cassette compartment in the direction of the arrow Ⓐ to move it up in the direction of the arrow Ⓑ.

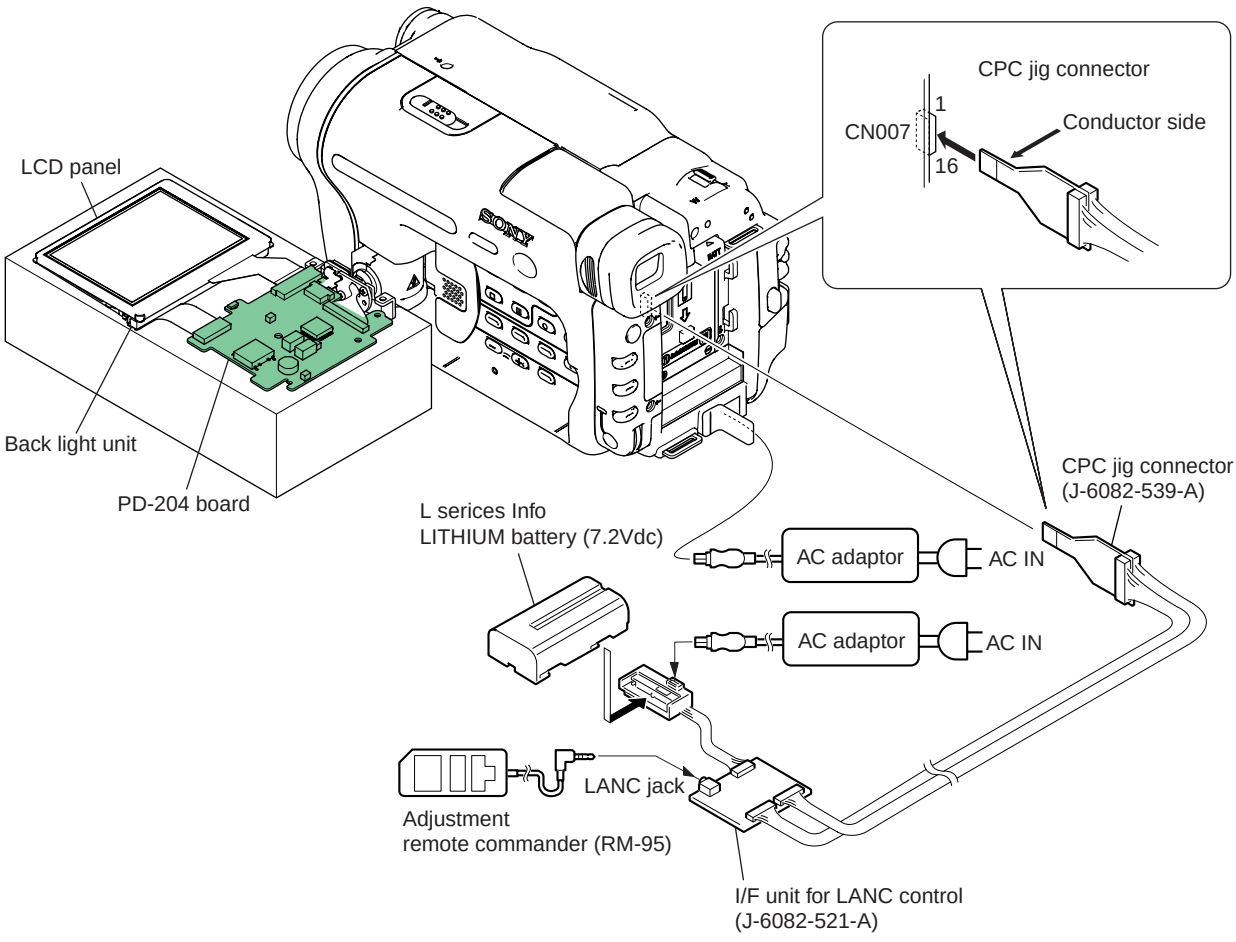




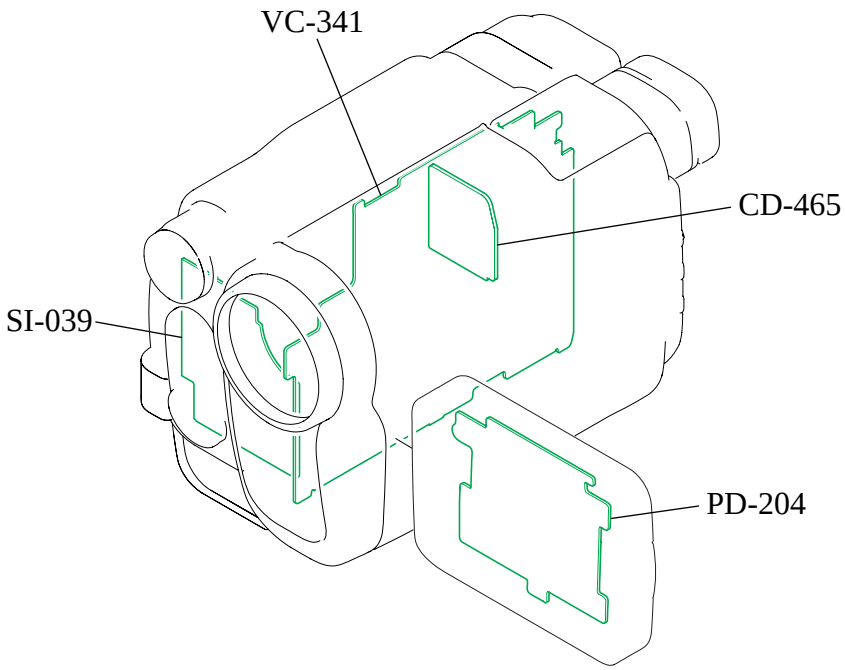
When exiting the "Forced Power ON" mode, connect the control key block (SS-5100) to the CN006 of VC-341 board. Or, when ejecting the cassette, connect the control key block (SS-5100) to the CN006 of VC-341 board. and press the Eject switch.

2-3. LCD SERVICE POSITION



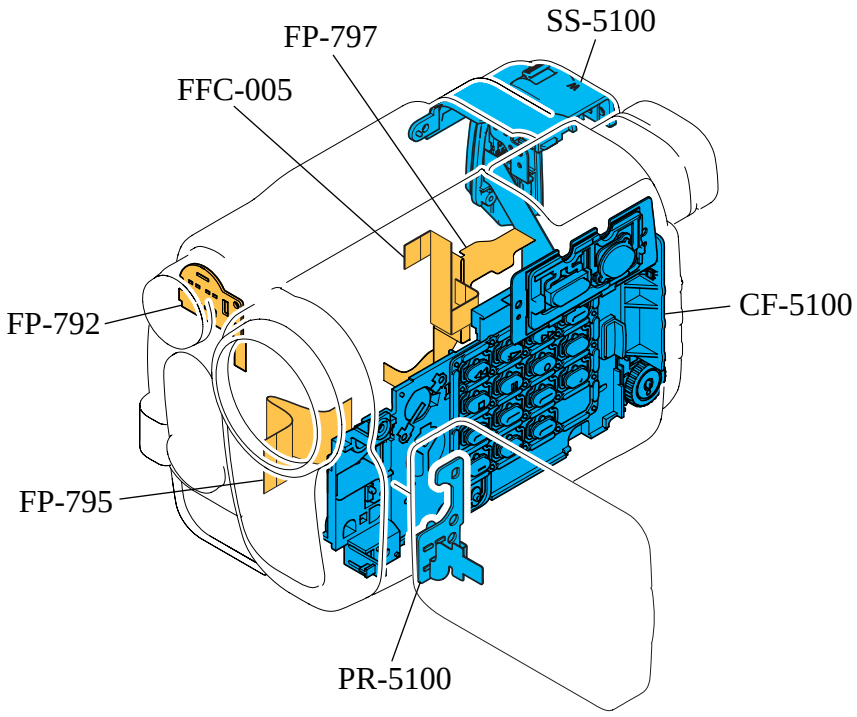


2-4. CIRCUIT BOARDS LOCATION



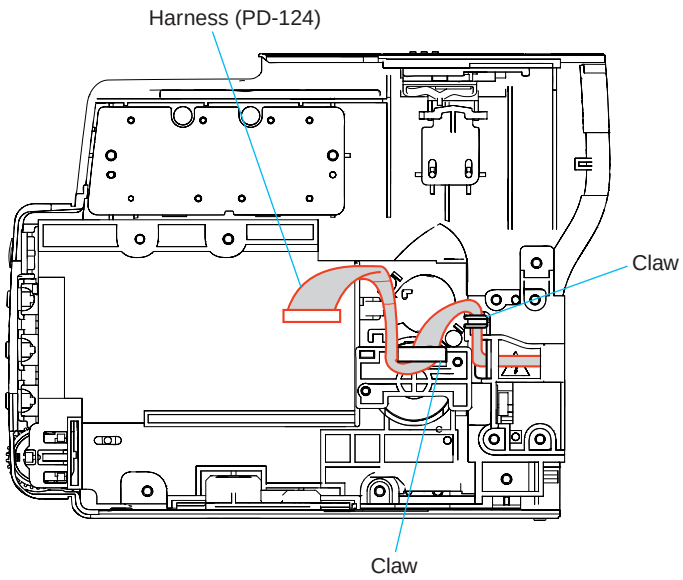
Board Name	Function
CD-465	CCD IMAGER
VC-341	A/D CONVERTER, TIMING GENERATOR, CAMERA/VTR PROCESS, LENS CONTROL, LENS DRIVE, REC/PB AMP, SERVO, CAMERA/MECHA CONTROL, HI CONTROL, AUDIO, VIDEO, DC CONTROL, STEADYSHOT, CONNECTOR
PD-204	LCD DRIVE, BACKLIGHT DRIVE
SI-039	STEADYSHOT, JACK

2-5. FLEXIBLE BOARDS LOCATION



HELP

Sheet attachment positions and procedures of processing the flexible boards/harnesses are shown.



Note: Close the LCD panel, when you work.

3. BLOCK DIAGRAMS

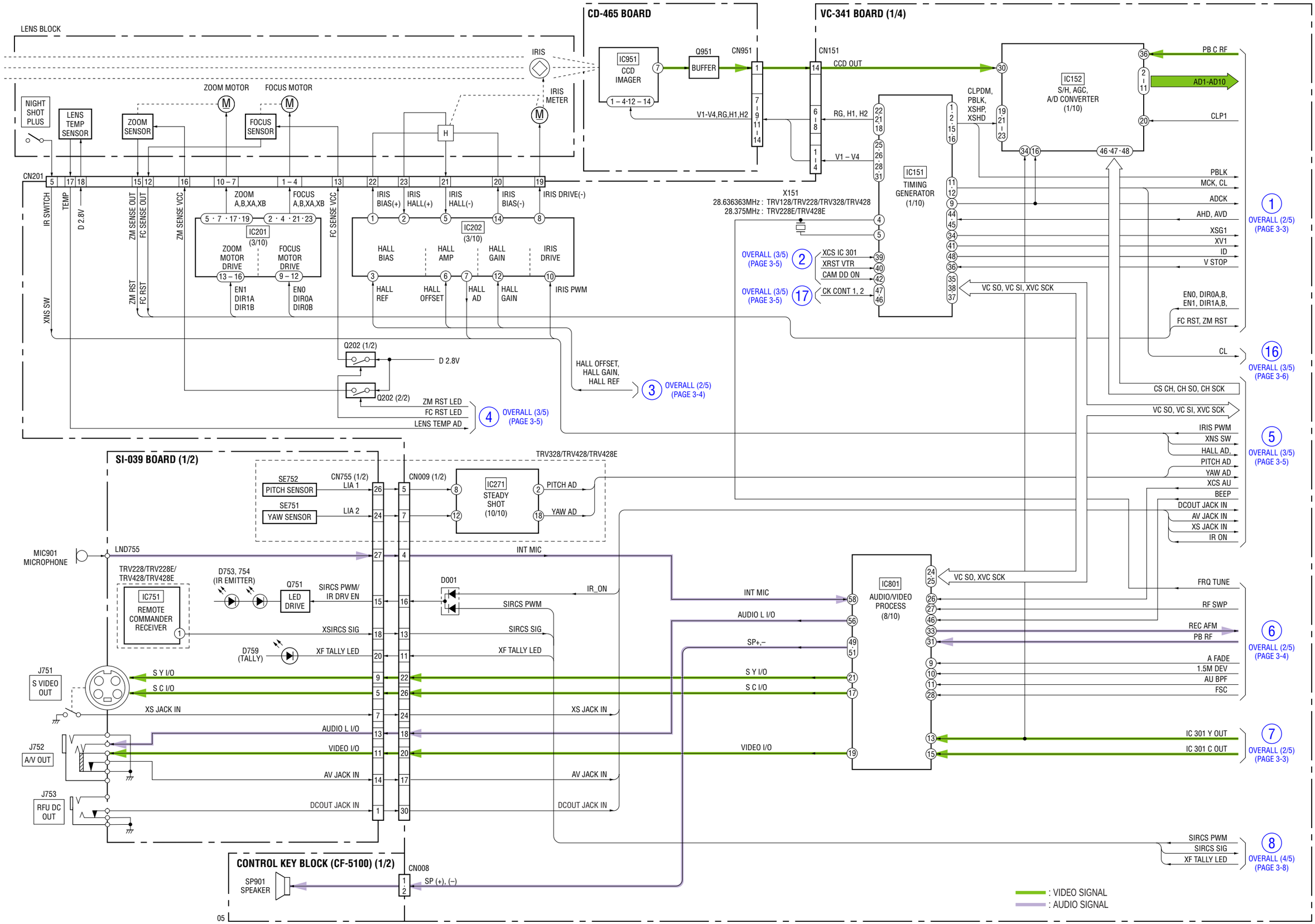
Link

OVERALL BLOCK DIAGRAM (1/5)	OVERALL BLOCK DIAGRAM (5/5)
OVERALL BLOCK DIAGRAM (2/5)	POWER BLOCK DIAGRAM (1/2)
OVERALL BLOCK DIAGRAM (3/5)	POWER BLOCK DIAGRAM (2/2)
OVERALL BLOCK DIAGRAM (4/5)	

SECTION 3
BLOCK DIAGRAMS

3-1. OVERALL BLOCK DIAGRAM (1/5)

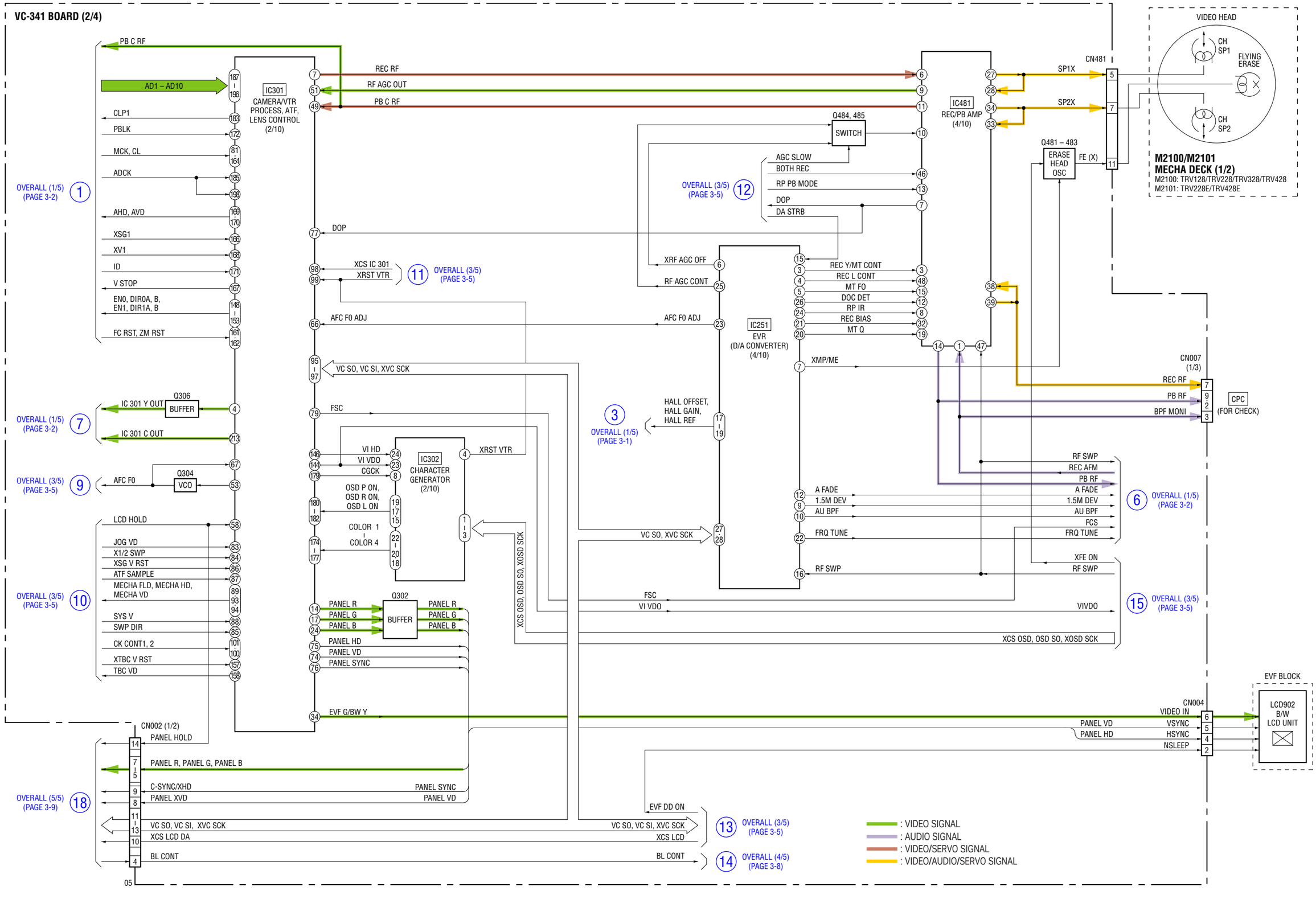
( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



3. BLOCK DIAGRAMS

3-2. OVERALL BLOCK DIAGRAM (2/5)

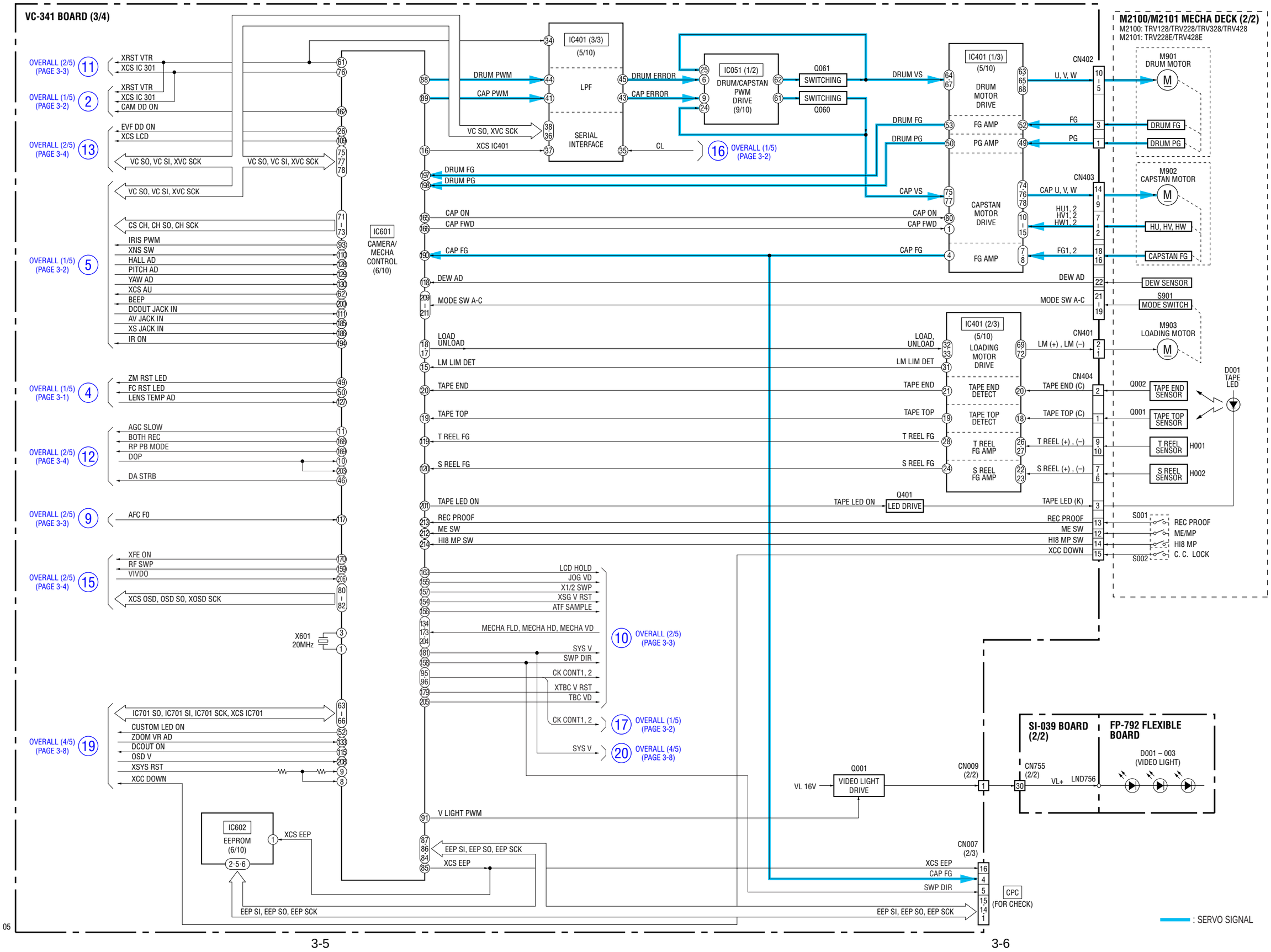
( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



3. BLOCK DIAGRAMS

3-3. OVERALL BLOCK DIAGRAM (3/5)

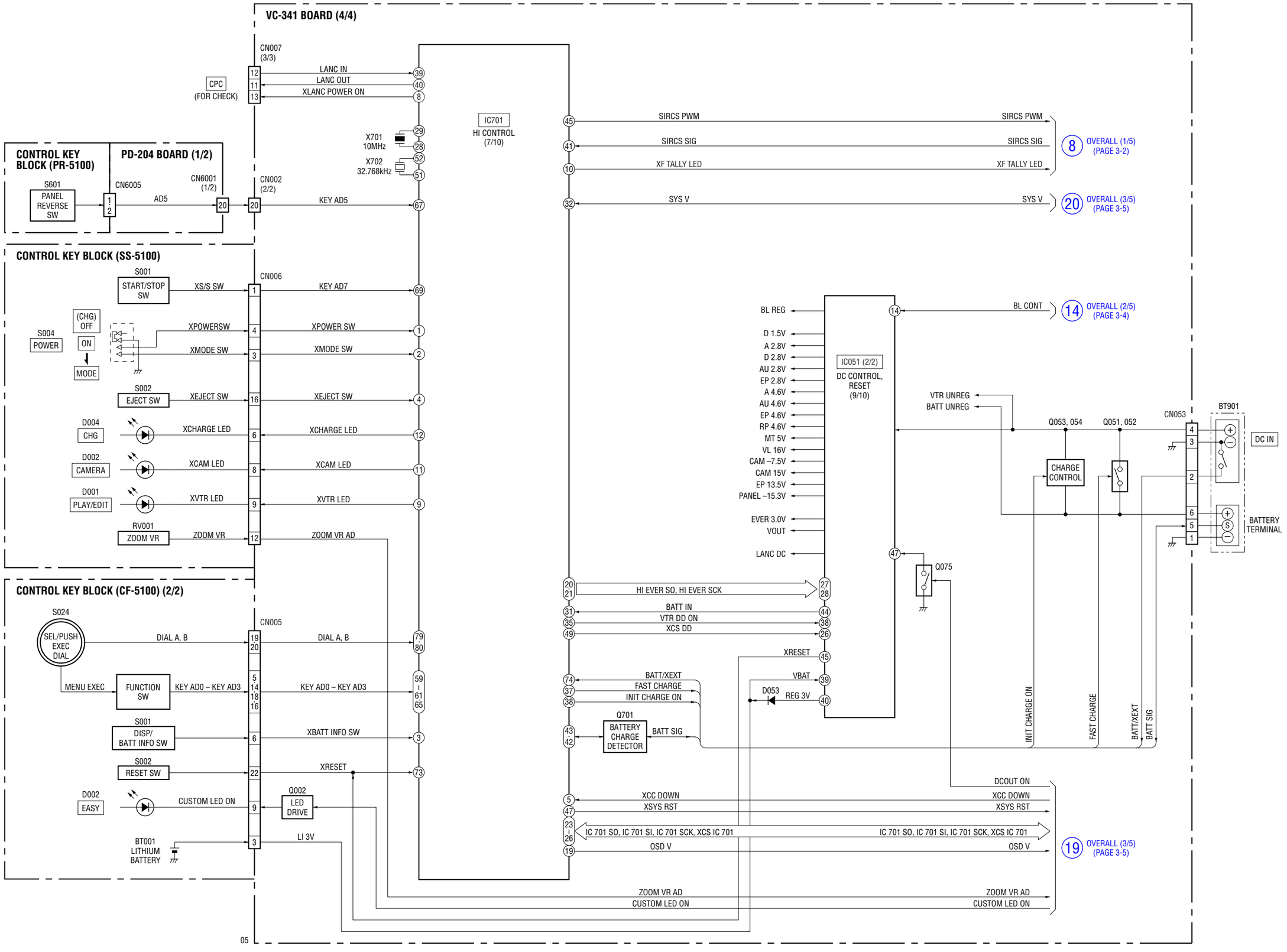
( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



3. BLOCK DIAGRAMS

3-4. OVERALL BLOCK DIAGRAM (4/5)

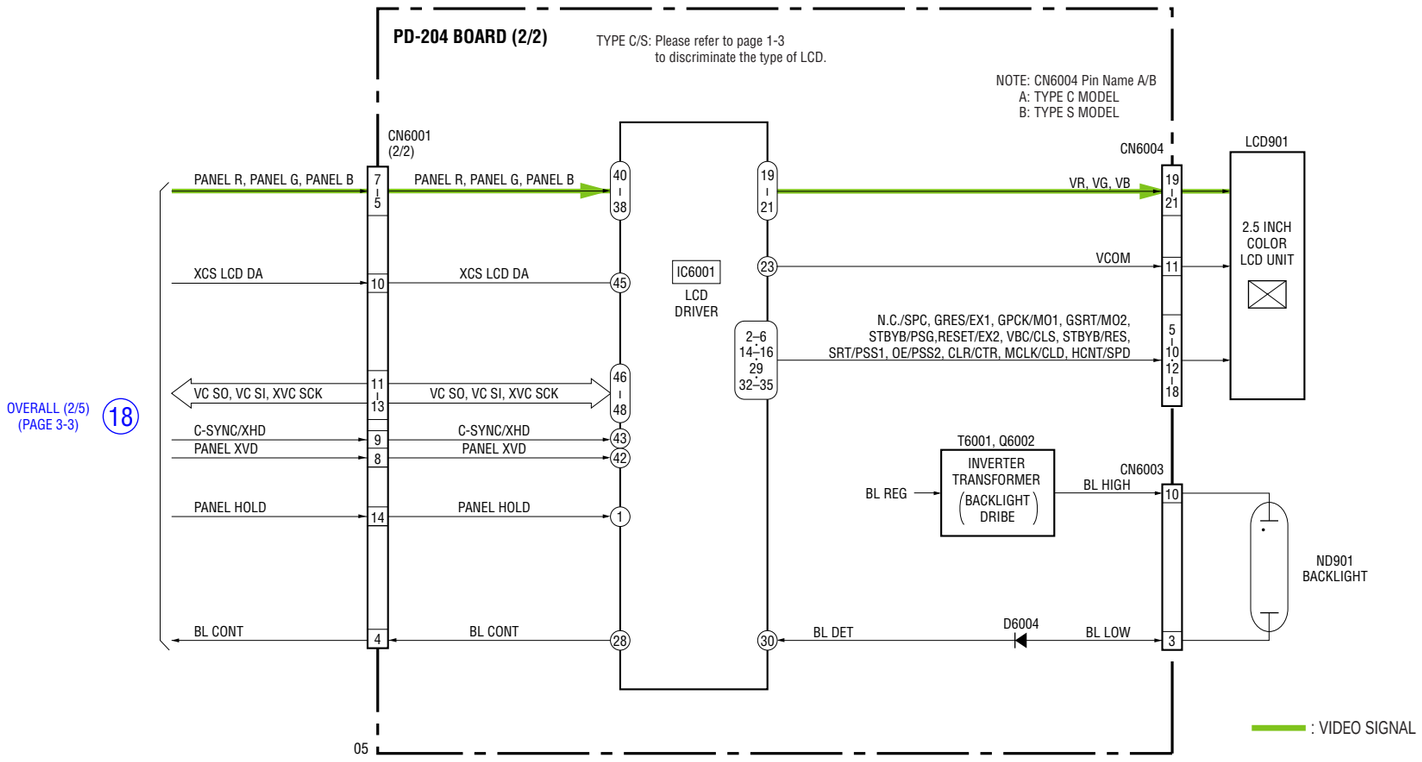
( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



3. BLOCK DIAGRAMS

3-5. OVERALL BLOCK DIAGRAM (5/5)

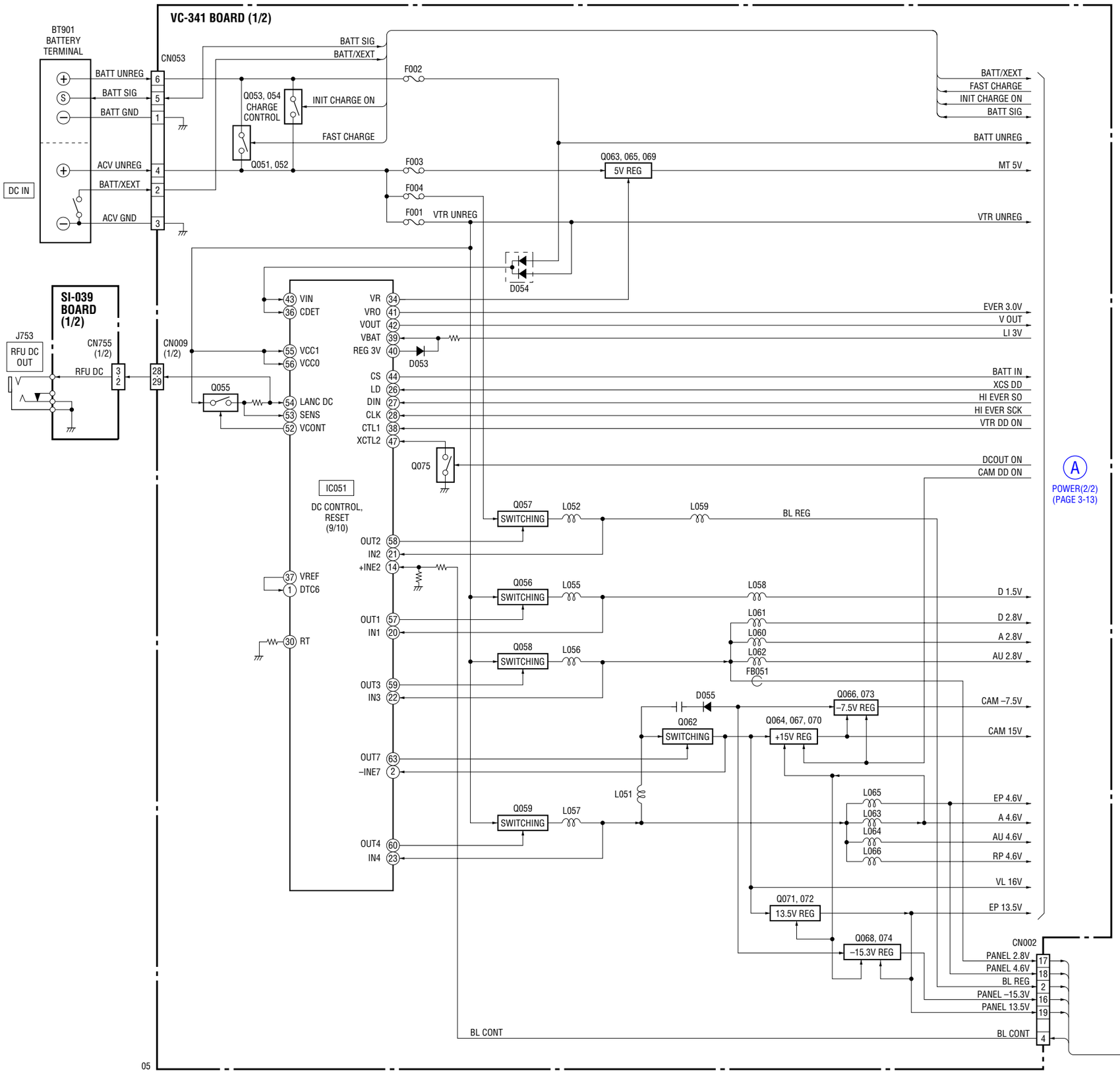
( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.

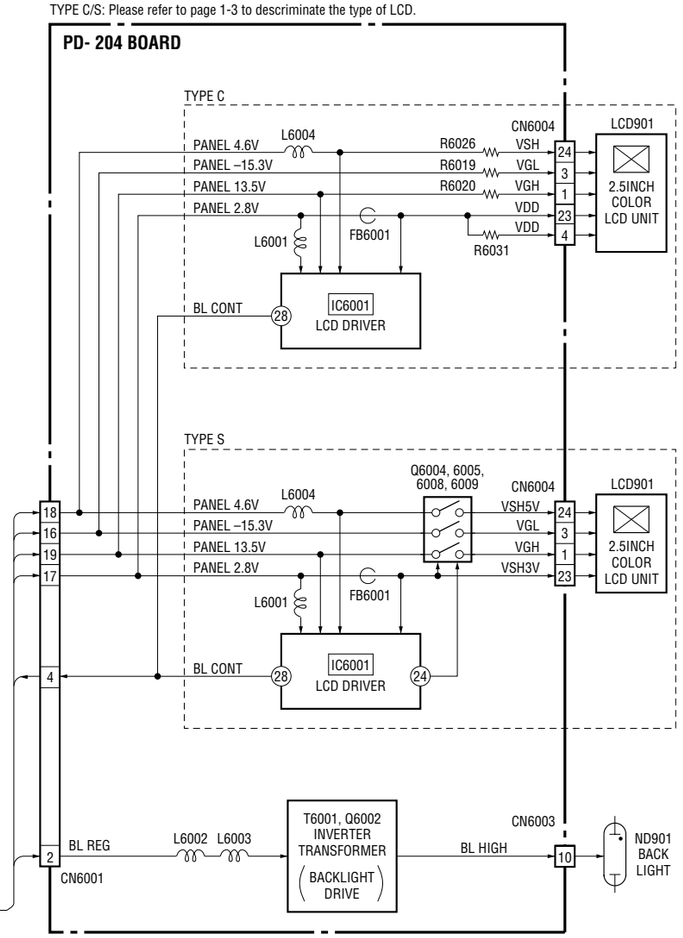


3. BLOCK DIAGRAMS

3-6. POWER BLOCK DIAGRAM (1/2)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.

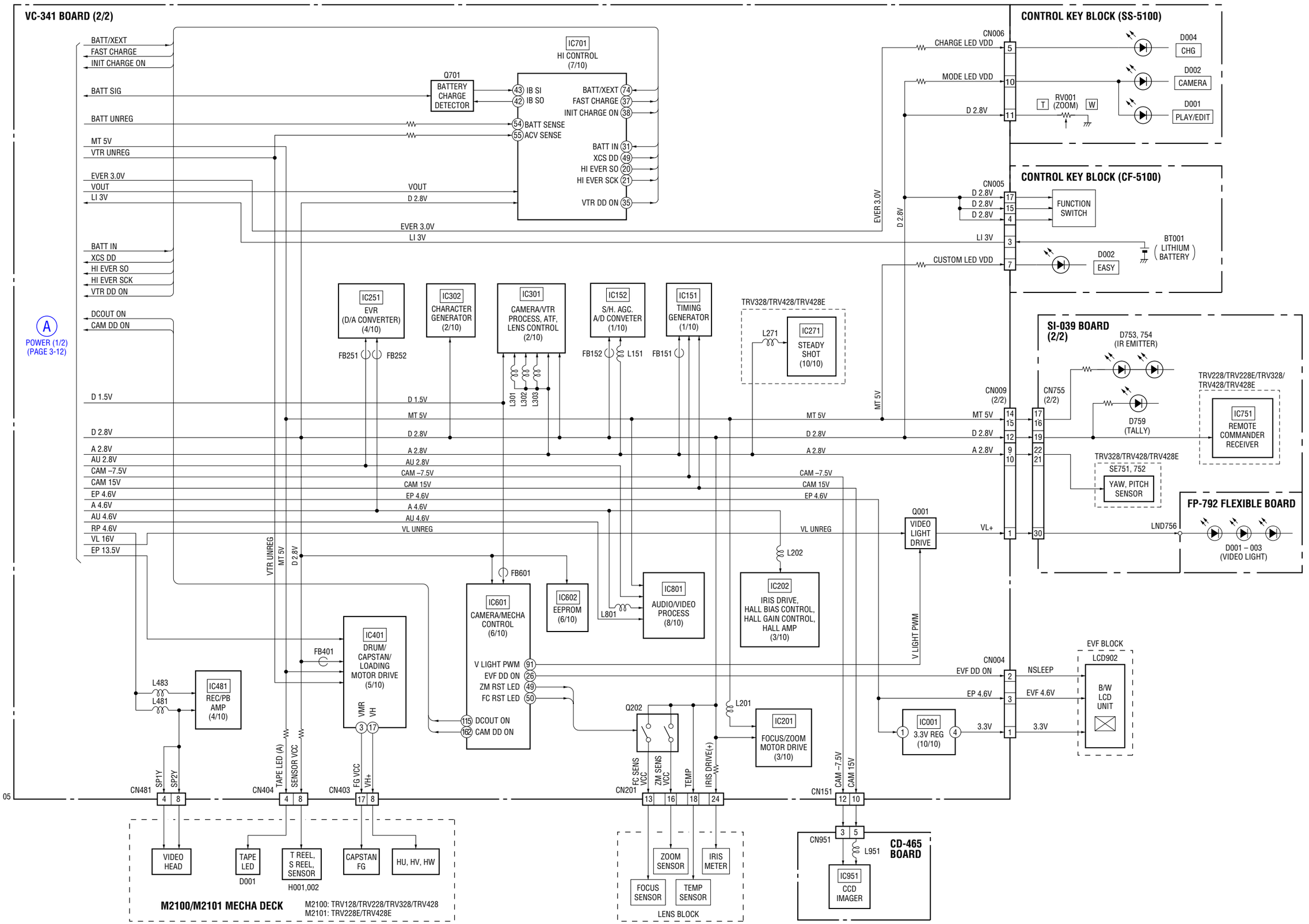




3. BLOCK DIAGRAMS

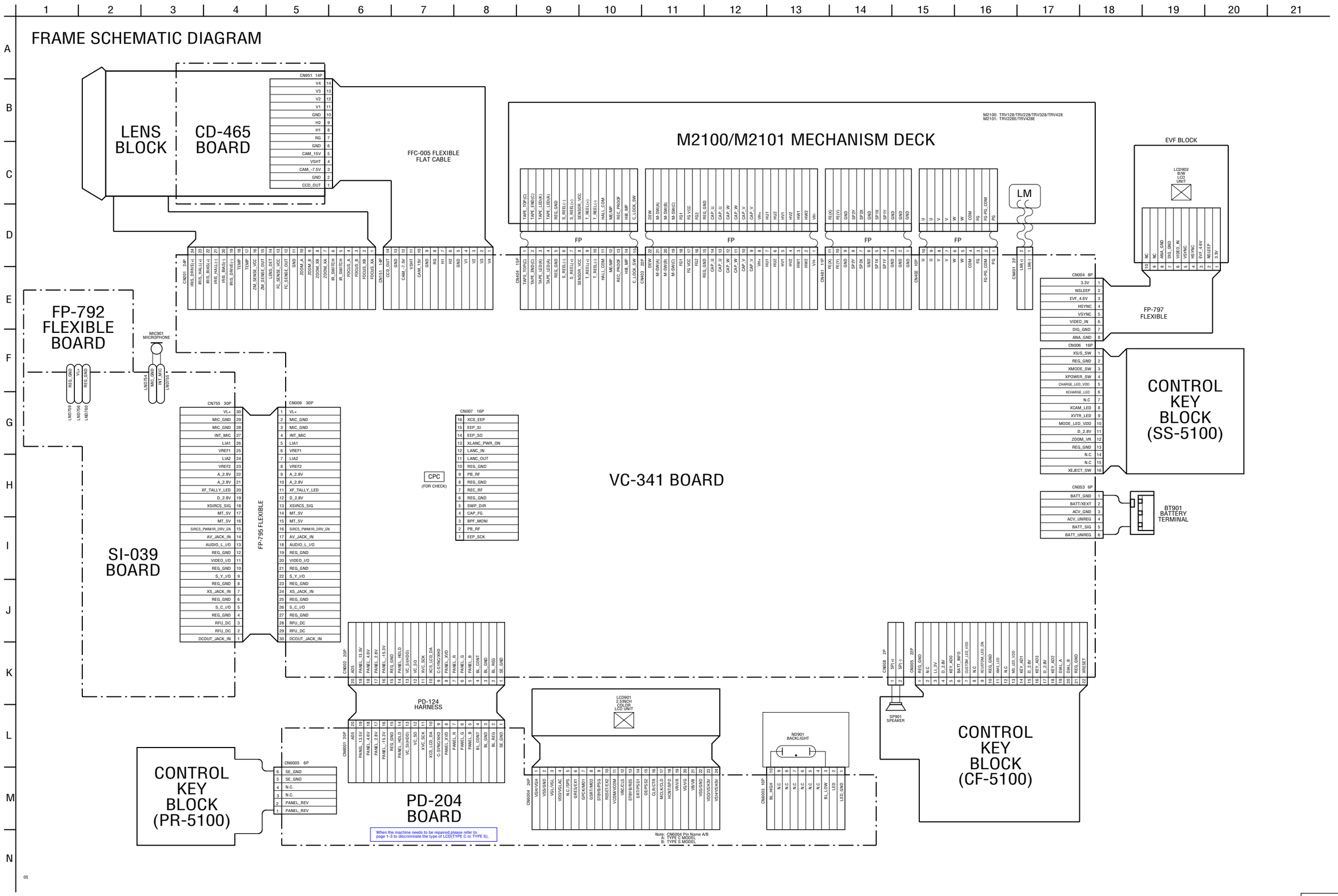
3-7. POWER BLOCK DIAGRAM (2/2)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAMS



4-2. SCHEMATIC DIAGRAMS

Link

- CD-465 BOARD (CCD IMAGER)
- VC-341 BOARD (1/10) (A/D CONVERTER, TIMING GENERATOR)
- VC-341 BOARD (2/10) (CAMERA/VTR PROCESS, LENS CONTROL)
- VC-341 BOARD (3/10) (LENS DRIVE)
- VC-341 BOARD (4/10) (REC/PB AMP)
- VC-341 BOARD (5/10) (SERVO)
- VC-341 BOARD (6/10) (CAMERA/MECHA CONTROL)
- VC-341 BOARD (7/10) (HI CONTROL)
- VC-341 BOARD (8/10) (AUDIO, VIDEO)
- VC-341 BOARD (9/10) (DC CONTROL)
- VC-341 BOARD (10/10) (STEADYSHOT, CONNECTOR)
- PD-204 BOARD (LCD DRIVER, BACKLIGHT DRIVE)
- SI-039 BOARD (STEADYSHOT, JACK) FP-792 FLEXIBLE BOARD
- FP-228, FP-299, FP-300, FP-301, FP-302, FP-802 FLEXIBLE BOARD
- CONTROL KEY BLOCK (SS-5100)
- CONTROL KEY BLOCK (PR-5100)
- CONTROL KEY BLOCK (CF-5100)

- COMMON NOTE FOR SCHEMATIC DIAGRAMS

4-2. SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR SCHEMATIC DIAGRAMS
(In addition to this, the necessary note is printed in each block)

(For schematic diagrams)

- All capacitors are in µF unless otherwise noted. pF : µµF. 50 V or less are not indicated except for electrolytics and tantalums.
- Chip resistors are 1/10 W unless otherwise noted. kΩ=1000 Ω, MΩ=1000 kΩ.
- Caution when replacing chip parts. New parts must be attached after removal of chip. Be careful not to heat the minus side of tantalum capacitor, Because it is damaged by the heat.
- Some chip part will be indicated as follows.

Example C541 22U TA A L452 10UH 2520

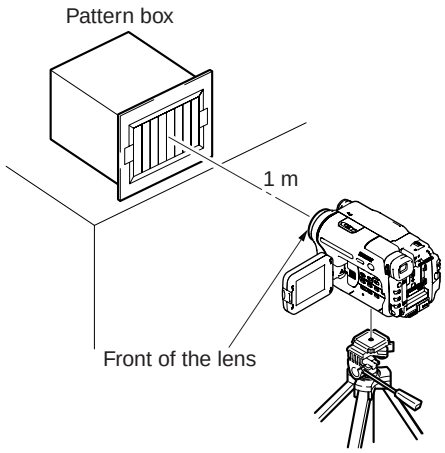
Kinds of capacitor
Case size
External dimensions (mm)

- Constants of resistors, capacitors, ICs and etc with XX indicate that they are not used. In such cases, the unused circuits may be indicated.
- Parts with ★ differ according to the model/destination. Refer to the mount table for each function.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Signal name
  XEDIT → $\overline{\text{EDIT}}$ PB/XREC → PB/$\overline{\text{REC}}$
- : non flammable resistor
- : fusible resistor
- : panel designation
- : B+ Line
- : B– Line
- : IN/OUT direction of (+,–) B LINE.
- : adjustment for repair.
- : VIDEO SIGNAL (ANALOG)
- : AUDIO SIGNAL (ANALOG)
- : VIDEO/AUDIO SIGNAL
- : VIDEO/AUDIO/SERVO SIGNAL
- : VIDEO/SERVO SIGNAL
- : SERVO SIGNAL
- Circled numbers refer to waveforms.

(Measuring conditions voltage and waveform)

- Voltages and waveforms are measured between the measurement points and ground when camera shoots color bar chart of pattern box. They are reference values and reference waveforms. (VOM of DC 10 MΩ input impedance is used)
- Voltage values change depending upon input impedance of VOM used.)

1. Connection



2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

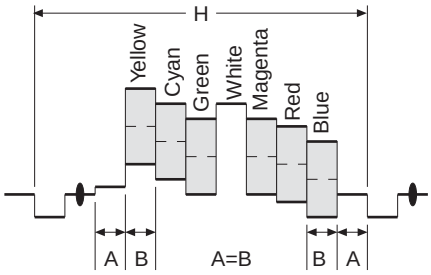


Fig. a (Video output terminal output waveform)

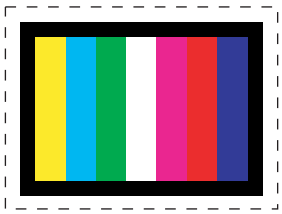


Fig.b (Picture on monitor TV)

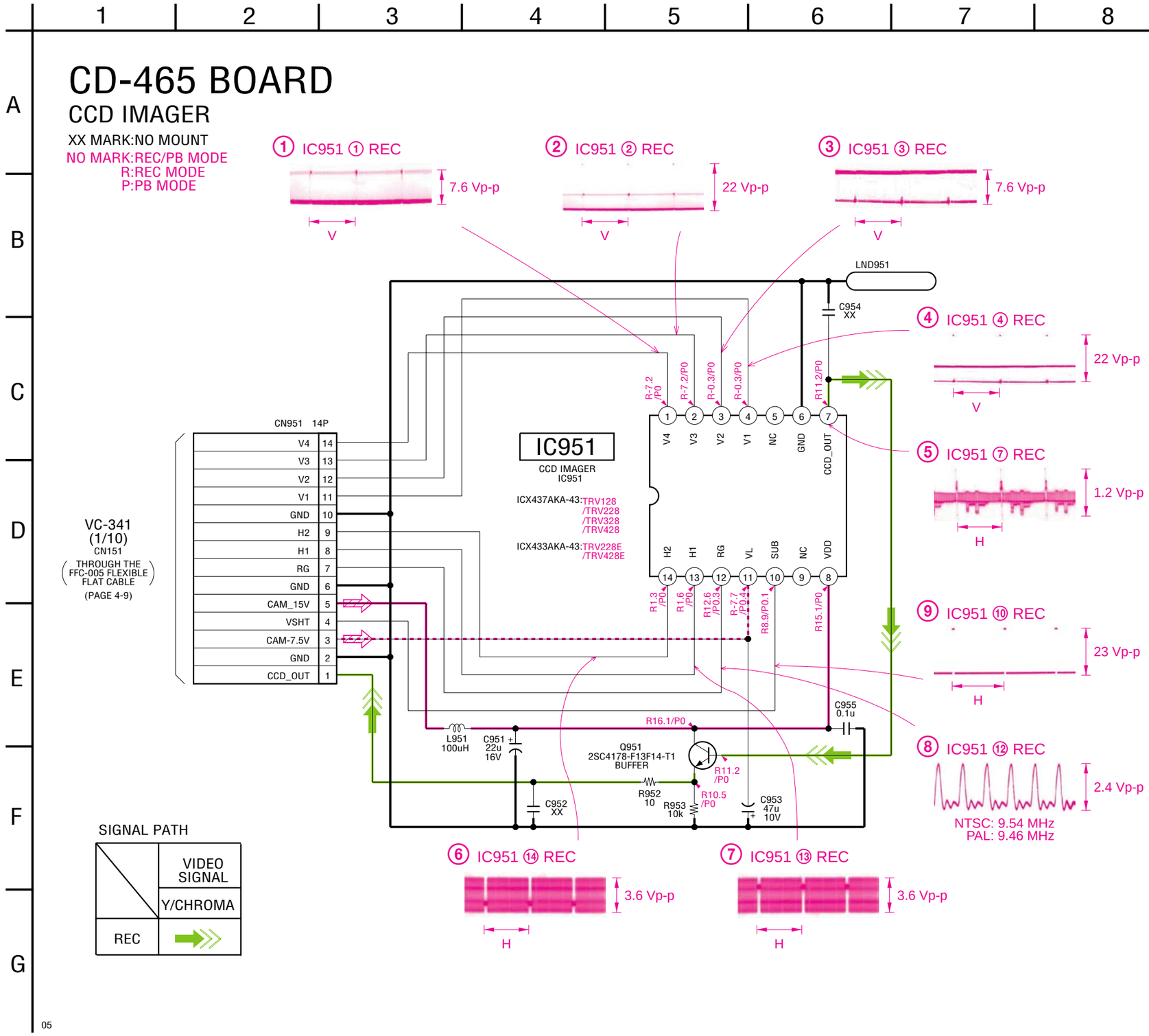
When indicating parts by reference number, please include the board name.

Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Note : Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifie.

For Schematic Diagram

• Refer to page 4-41 for printed wiring board.

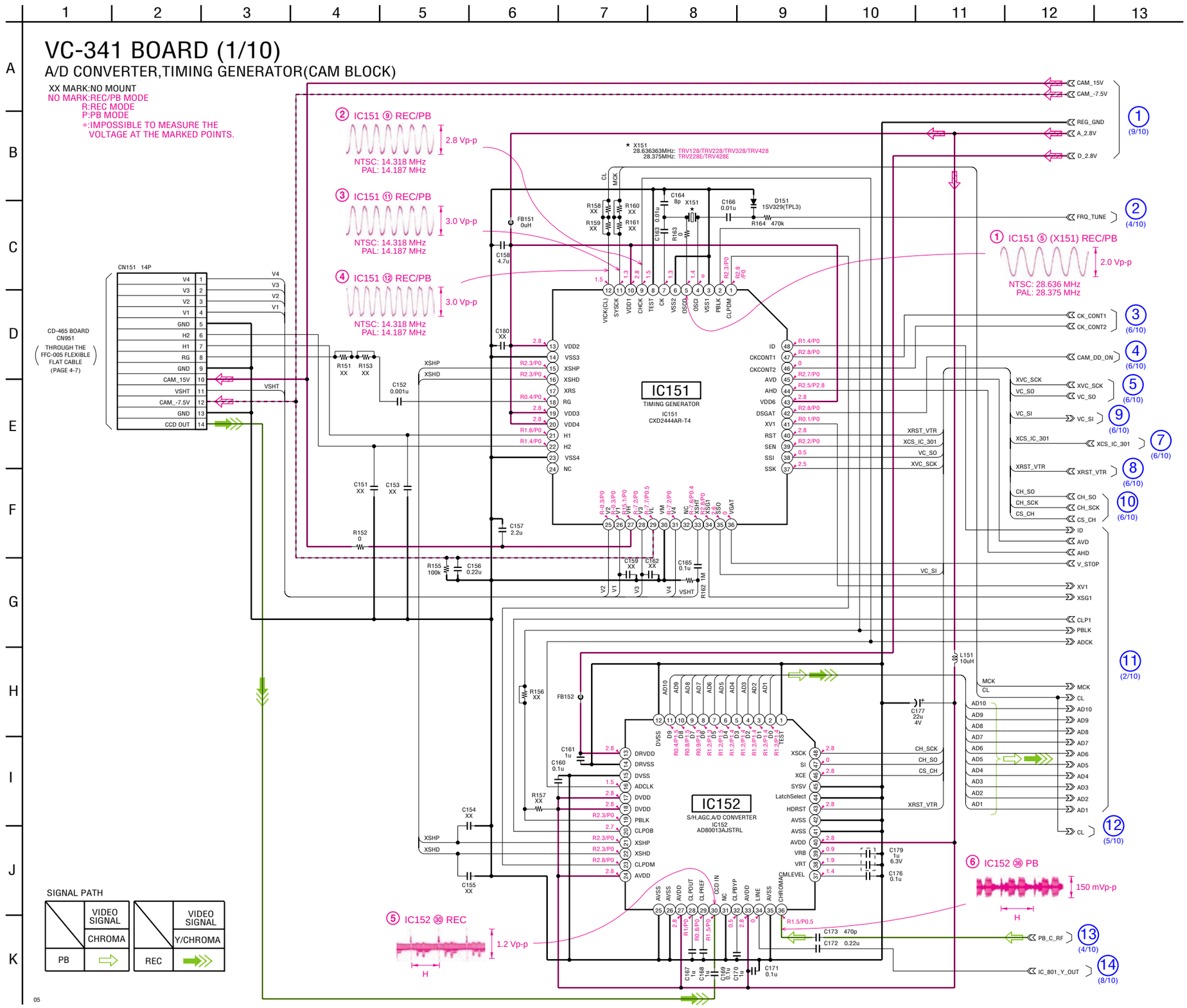


Precautions for Replacement of CCD Imager

- The CD-465 board mounted as a repair part is not equipped with a CCD imager.
  When replacing this board, remove the CCD imager from the old one and mount it onto the new one.
- If the CCD imager has been replaced, carry out all the adjustments for the camera section.
- As the CCD imager may be damaged by static electricity from its structure, handle it carefully like for the MOS IC.
  In addition, ensure that the receiver is not covered with dusts nor exposed to strong light.

For Schematic Diagram

• Refer to page 4-43 for printed wiring board.



For Schematic Diagram

• Refer to page 4-43 for printed wiring board.

VC-341 BOARD (2/10)

CAMERA/VTR PROCESS,LENS CONTROL (CL BLOCK)

XX MARK:NO MOUNT
NO MARK:REC/PB MODE
R:REC MODE
P:PB MODE

SIGNAL PATH

Ref.signal	REC	REC/PB	PB

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	⇒	⇒	⇒
PB	⇨	⇨	

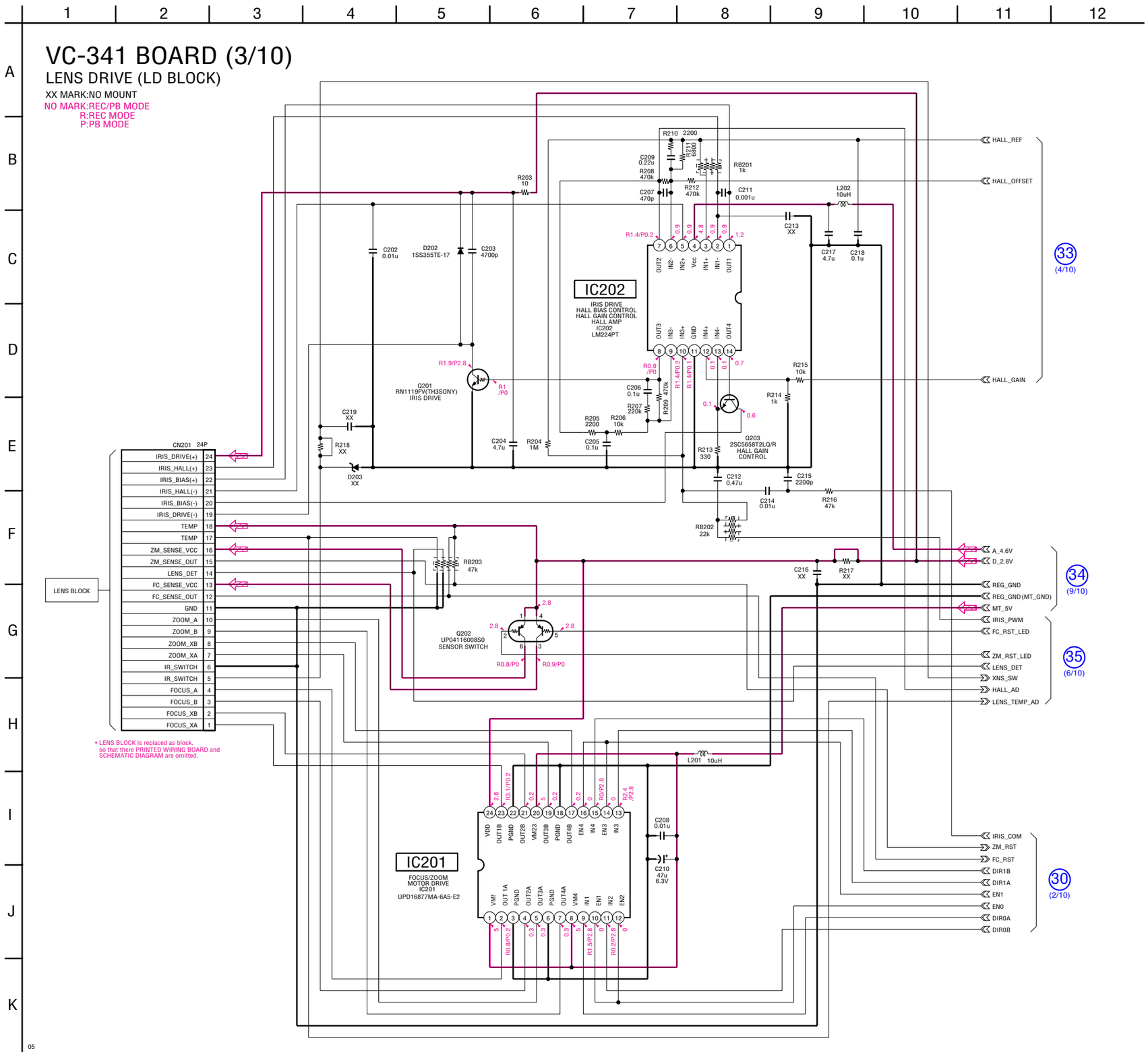
VIDEO/SERVO SIGNAL

IC301
CAMERA/VTR PROCESS,ATF, LENS CONTROL
IC301
HG76C012FL

IC302
CHARACTER GENERATOR
IC302
BU3097-04FV-E2

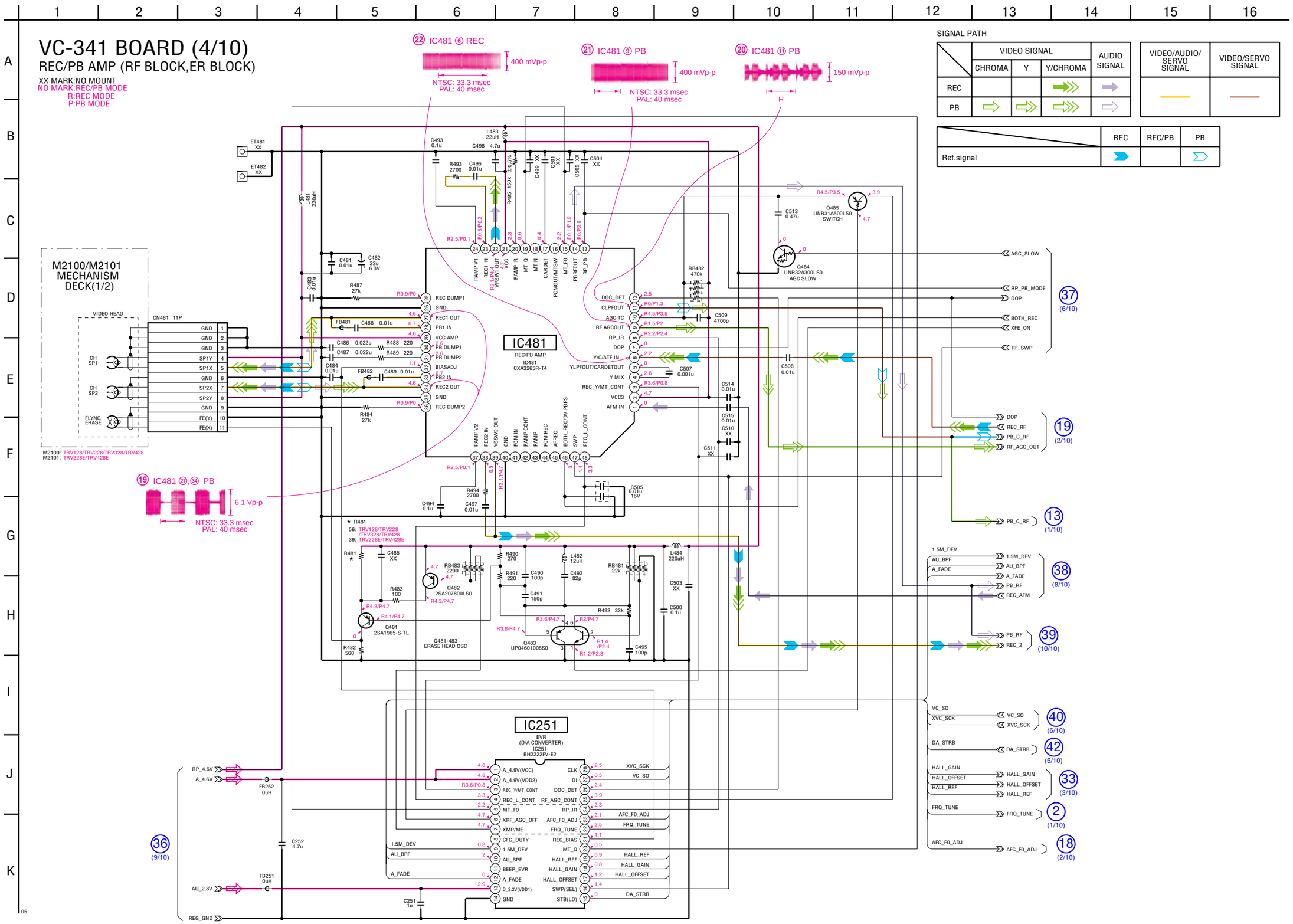
For Schematic Diagram

• Refer to page 4-43 for printed wiring board.



For Schematic Diagram

• Refer to page 4-43 for printed wiring board.



For Schematic Diagram

• Refer to page 4-43 for printed wiring board.

VC-341 BOARD (5/10)

SERVO (SB BLOCK)

XX MARK:NO MOUNT

NO MARK:REC/PB MODE
R:REC MODE
P:PB MODE
*:IMPOSSIBLE TO MEASURE THE VOLTAGE AT THE MARKED POINTS.

M2100 /M2101 MECHANISM DECK (2/2)

M2100:TRV128 /TRV228 /TRV328 /TRV428

M2101:TRV228E /TRV428E

M903 LOADING MOTOR

M901 DRUM MOTOR

FP/PG

CN401 2P

CN402 10P

CN403 22P

CN404 15P

MECHANISM BLOCK (CAPSTAN MOTOR) (PAGE 4-33)

MECHANISM BLOCK (SENSOR) (PAGE 4-33)

IC401
DRUM/CAPSTAN/LOADING MOTOR DRIVE IC401 TB6550FG(O,EB)

23 IC401 ④ REC/PB — 2.8 Vp-p — NTSC: 820 Hz PAL: 1148 Hz

24 IC401 63,65,66 REC/PB — 1.4 Vp-p — NTSC: 180 Hz PAL: 150 Hz

25 IC401 53 REC/PB — 2.8 Vp-p — NTSC: 180 Hz PAL: 150 Hz

26 IC401 50 REC/PB — 2.8 Vp-p — NTSC: 33.3 msec PAL: 40 msec

27 IC401 44 REC/PB — 80 mVp-p — 13 sec

28 IC401 41 REC/PB — 70 mVp-p — 13 sec

★ R413,R427
0 :TRV128/TRV228/TRV328/TRV428
10k :TRV228E/TRV428E

★ R414
15k :TRV128/TRV228/TRV328/TRV428
47k :TRV228E/TRV428E

SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷	
Drum servo(speed and phase)		▷	
Capstan speed servo		▷	
Capstan servo(speed and phase)		▷	

For Schematic Diagram

• Refer to page 4-43 for printed wiring board.

VC-341 BOARD (6/10)

CAMERA/MECHA CONTROL

XX MARK:NO MOUNT

NO MARK:REC/PB MODE
R:REC MODE
P:PB MODE
*:IMPOSSIBLE TO MEASURE THE VOLTAGE AT THE MARKED POINTS.

IC601
CAMERA/MECHA CONTROL
IC601
MB91194APFF-G-153-BNDE1

29 IC601 ① (X601) REC/PB
1.9 Vp-p
20 MHz

30 IC601 ⑱ REC/PB
2.9 Vp-p
NTSC: 33.3 msec
PAL: 40 msec

IC602
EEPROM
IC602
HN58X2532TI

SIGNAL PATH

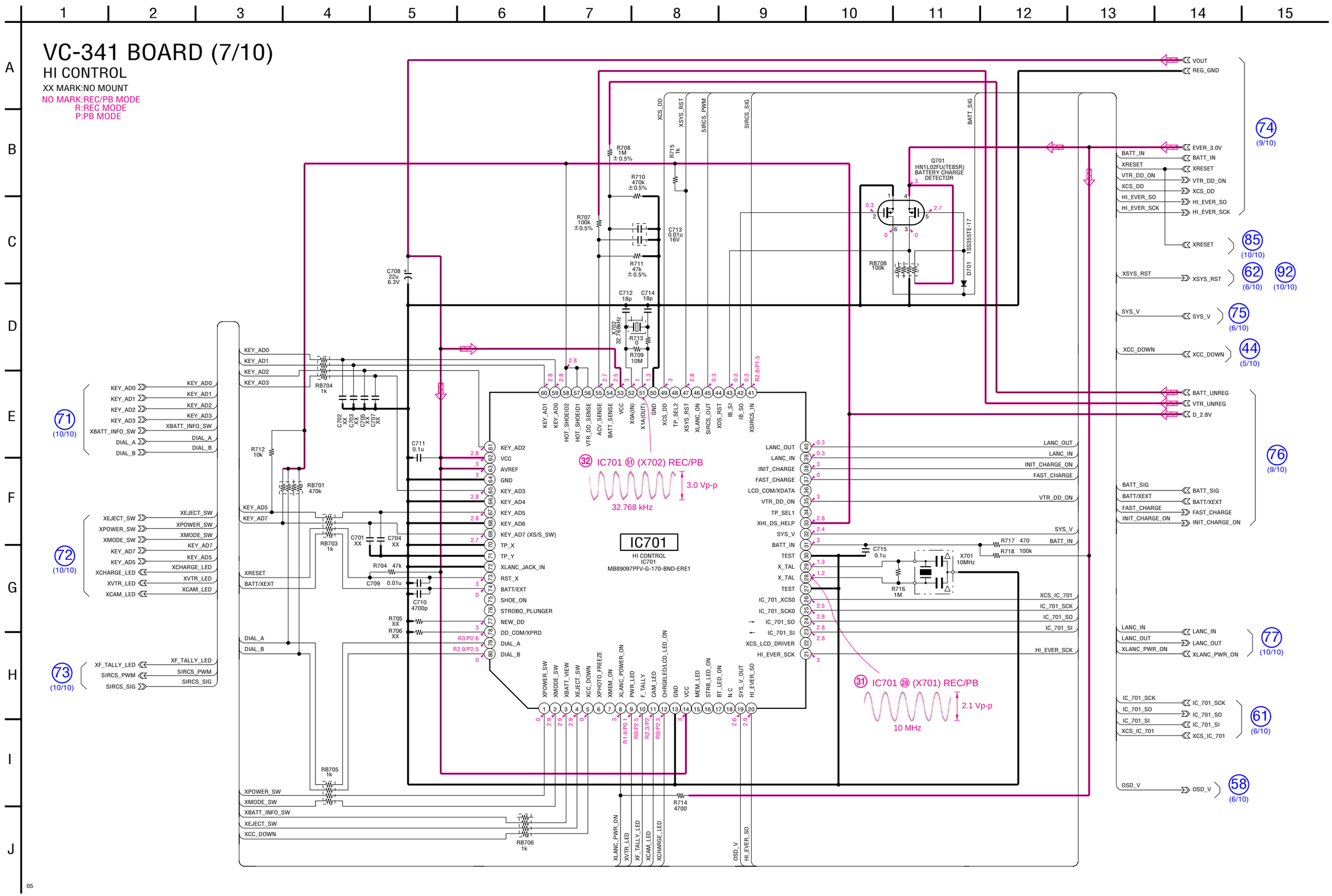
	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷	
Drum servo(speed and phase)		▷▷	
Capstan speed servo		▷	
Capstan servo(speed and phase)		▷»	

★ C617,C618
100k (Note):TRV128/TRV228/TRV228E
0.01u :TRV328/TRV428/TRV428E

Note:Resistors are mounted to the location where C617 and C618 are printed. (TRV128/TRV228/TRV228E only)

For Schematic Diagram

• Refer to page 4-43 for printed wiring board.



For Schematic Diagram

• Refer to page 4-43 for printed wiring board.

VC-341 BOARD (8/10)

AUDIO,VIDEO

XX MARK:NO MOUNT

NO MARK:REC/PB MODE
R:REC MODE
P:PB MODE

SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡	➡	➡
PB	⇨	⇨	⇨	⇨

IC801
AUDIO/VIDEO PROCESS
IC801
AN12985A-VB

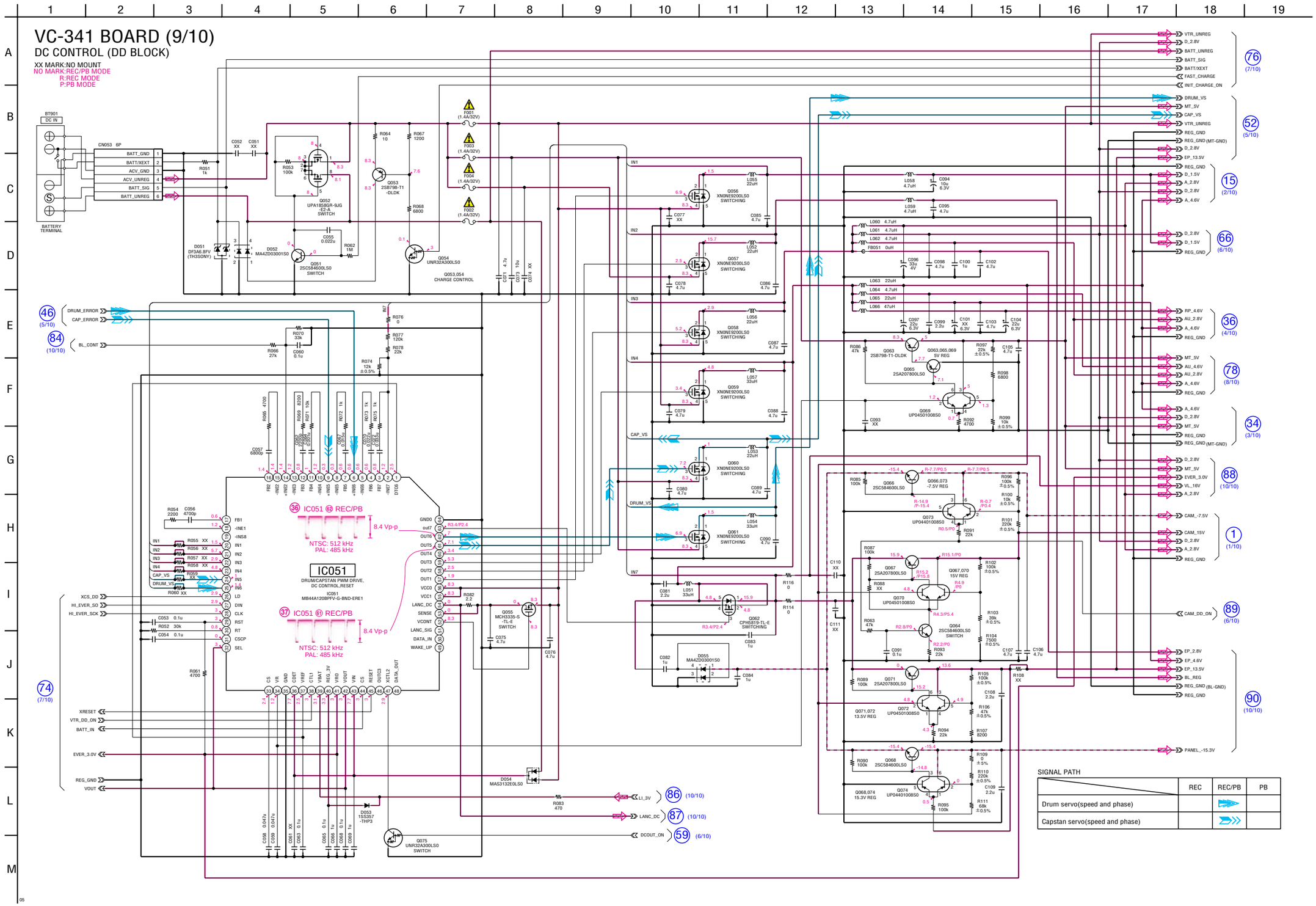
33 IC801 ㉑ REC/PB (S JACK IN) 1.8 Vp-p H

34 IC801 ⑲ REC/PB (AV JACK IN) 2.0 Vp-p H

35 IC801 ⑰ REC/PB (S JACK IN) 990 mVp-p H

For Schematic Diagram

• Refer to page 4-43 for printed wiring board.



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

For Schematic Diagram

• Refer to page 4-43 for printed wiring board.

VC-341 BOARD (10/10)

STEADYSHOT,CONNECTOR (SE BLOCK,CN BLOCK)

XX MARK:NO MOUNT

NO MARK:REC/PB MODE

CN002 20P

SE_GND	1
BL_REG	2
BL_GND	3
BL_CONT	4
PANEL_B	5
PANEL_G	6
PANEL_R	7
PANEL_XVD	8
C-SYNC/XHD	9
XCS_LCD_DA	10
XVC_SCK	11
VC_SO	12
VC_SI(HDO)	13
PANEL_HOLD	14
REG_GND	15
PANEL_-15.3V	16
PANEL_2.8V	17
PANEL_4.6V	18
PANEL_13.5V	19
AD5	20

PD-204 CN6001 (THROUGH THE PD-124 HARNESS) (PAGE 4-29)

CN006 16P

XS/S_SW	1
REG_GND	2
XMODE_SW	3
XPOWER_SW	4
CHARGE_LED_VDD	5
XCHARGE_LED	6
N.C	7
XCAM_LED	8
XVTR_LED	9
MODE_LED_VDD	10
D_2.8V	11
ZOOM_VR	12
REG_GND	13
N.C	14
N.C	15
XEJECT_SW	16

CONTROLL KEY BLOCK (SS-5100) (PAGE 4-34)

CN009 30P

VL+	1
MIC_GND	2
MIC_GND	3
INT_MIC	4
LIA1	5
VREF1	6
LIA2	7
VREF2	8
A_2.8V	9
A_2.8V	10
XF_TALLY_LED	11
D_2.8V	12
XSIRCS_SIG	13
MT_5V	14
MT_5V	15
SIRCS_PWM/IR_DRV_EN	16
AV_JACK_IN	17
AUDIO_L_I/O	18
REG_GND	19
VIDEO_I/O	20
REG_GND	21
S_Y_I/O	22
REG_GND	23
XS_JACK_IN	24
REG_GND	25
S_C_I/O	26
REG_GND	27
RFU_DC	28
RFU_DC	29
DCOUT_JACK_IN	30

SI-039 CN755 (THROUGH THE FP-795 FLEXIBLE) (PAGE 4-32)

R001 470 · R003 XX · R014 82 · R021 150 · R002 2200 · R004 22 ±0.5% · R007 1k ±0.5% · R010 10k ±0.5% · R011 1k

D006 MAZB068H0LS0 · D007 MAZB068H0LS0 · D001 MAS3132E0LS0

Q001 XN4601-TW VIDEO LIGHT DRIVE

BL_CONT 84 (9/10) · PANEL_SYNC 22 (2/10) · XCS_LCD 60 (6/10) · KEY_AD5 · KEY_AD7 · XCHARGE_LED · XCAM_LED · XVTR_LED · XPOWER_SW · XMODE_SW · XEJECT_SW 72 (7/10) · ZOOM_VR_AD 57 (6/10) · LCD_HOLD 67 (6/10) · VC_SI 94 (6/10) · VC_SO · XVC_SCK 95 (6/10) · PANEL_R · PANEL_G · PANEL_B 20 (2/10)

BL_REG · REG_GND (BL_GND) · PANEL_-15.3V · EP_2.8V · EP_4.6V · EP_13.5V · REG_GND 90 (9/10)

V_LIGHT_PWM · INT_MIC · XF_TALLY_LED · SIRCS_SIG · IR_ON · SIRCS_PWM · AV_JACK_IN · AUDIO_L_I/O · VIDEO_I/O · S_Y_I/O · XS_JACK_IN · S_C_I/O · LACN_DC · DCOUT_JACK_IN

IC271 STEADYSHOT IC271 NJM3230V(TE2)

C278 22u · C279 XX · C280 4.7u · C281 0.1u 6.3V · C282 0.047u 10V · C283 0.047u 10V · C276 22u · R271 1M · R272 10k · R273 10k · R274 1M · R275 XX · RB271 22k · L271 10uH

PITCH_AD · VST_C_RESET · YAW_AD

54 (6/10)

TRV328/TRV428/TRV428E

PANEL_VD · PANEL_HD · EVF_G/BW_Y 21 (2/10)

KEY_AD0 · KEY_AD1 · KEY_AD2 · KEY_AD3 · XBATT_INFO_SW · DIAL_A · DIAL_B 71 (7/10)

XRESET 85 (7/10)

V_LIGHT_PWM 56 (6/10)

INT_MIC · AUDIO_L_I/O 79 (8/10)

XF_TALLY_LED · SIRCS_SIG · SIRCS_PWM 73 (7/10)

AV_JACK_IN · CUSTOM_LED_ON · XS_JACK_IN · DCOUT_JACK_IN · EVF_DD_ON 53 (6/10)

VIDEO_I/O · S_Y_I/O · S_C_I/O 83 (8/10)

LANC_DC 87 (9/10)

IR_ON 68 (6/10)

XCS_EEP · SWP_DIR 65 (6/10)

PB_RF · REC_2 39 (4/10)

REC_AFM 80 (8/10)

CAP_FG 91 (5/10)

XLANC_PWR_ON · LANC_IN · LANC_OUT 77 (7/10)

EVF_G/BW_Y · PANEL_VD · PANEL_HD · EVF_DD_ON

IC001 3.3V REG IC001 TK11133CSCL-G · C002 0.1u · C003 4.7u

LI_3V 86 (9/10)

CN004 8P

8	ANA_GND
7	DIG_GND
6	VIDEO_IN
5	VSYNC
4	HSYNC
3	EVF_4.6V
2	NSLEEP
1	3.3V

THROUGH FP-797 FLEXIBLE · EVF BLOCK · LCD902 B/W LCD UNIT

CN005 22P

1	REG_GND
2	N.C
3	LI_3V
4	D_2.8V
5	KEY_AD0
6	BATT_INFO
7	CUSTOM_LED_VDD
8	N.C
9	XCUSTOM_LED_ON
10	REG_GND
11	XMS_LED
12	N.C
13	MS_LED_VDD
14	KEY_AD1
15	D_2.8V
16	KEY_AD3
17	D_2.8V
18	KEY_AD2
19	DIAL_A
20	DIAL_B
21	REG_GND
22	XRESET

CONTROLL KEY BLOCK (CF-5100) (PAGE 4-35)

KEY_AD0 · XBATT_INFO_SW · CUSTOM_LED_ON · KEY_AD1 · KEY_AD3 · KEY_AD2 · DIAL_A · DIAL_B · XRESET

Q002 UNR32A100LS0 LED DRIVE · D008 UDZSTE-176.8B · R015 150 · D009 DF3A6.8FV (TH3SONY)

EVER_3.0V · VL_16V · A_2.8V · MT_5V · D_2.8V 88 (9/10)

CL001 · CL002 · CL003 MD2 (REG_GND) · XCS_MC_FLASH 64 (6/10)

CL004 XSYS_RST 92 (7/10)

CL010 · CL005 · CL006 · CL007 EEP_SI · EEP_SO · EEP_SCK 63 (6/10)

CL008 · CL009 REC_CRRT1 · REC_CRRT0 93 (6/10)

R022 1k

CN007 16P

16	XCS_EEP
15	EEP_SI
14	EEP_SO
13	XLANC_PWR_ON
12	LANC_IN
11	LANC_OUT
10	REG_GND
9	PB_RF
8	REG_GND
7	REC_RF
6	REG_GND
5	SWP_DIR
4	CAP_FG
3	BPF_MONI
2	PB_RF
1	EEP_SCK

CPC (FOR CHECK)

XCS_EEP · XLANC_PWR_ON · LANC_IN · LANC_OUT · PB_RF · REC_2 · SWP_DIR · CAP_FG · REC_AFM

SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	→	→	→	→
PB	⇨	⇨	⇨	⇨

SIGNAL PATH

VIDEO/AUDIO/ SERVO SIGNAL

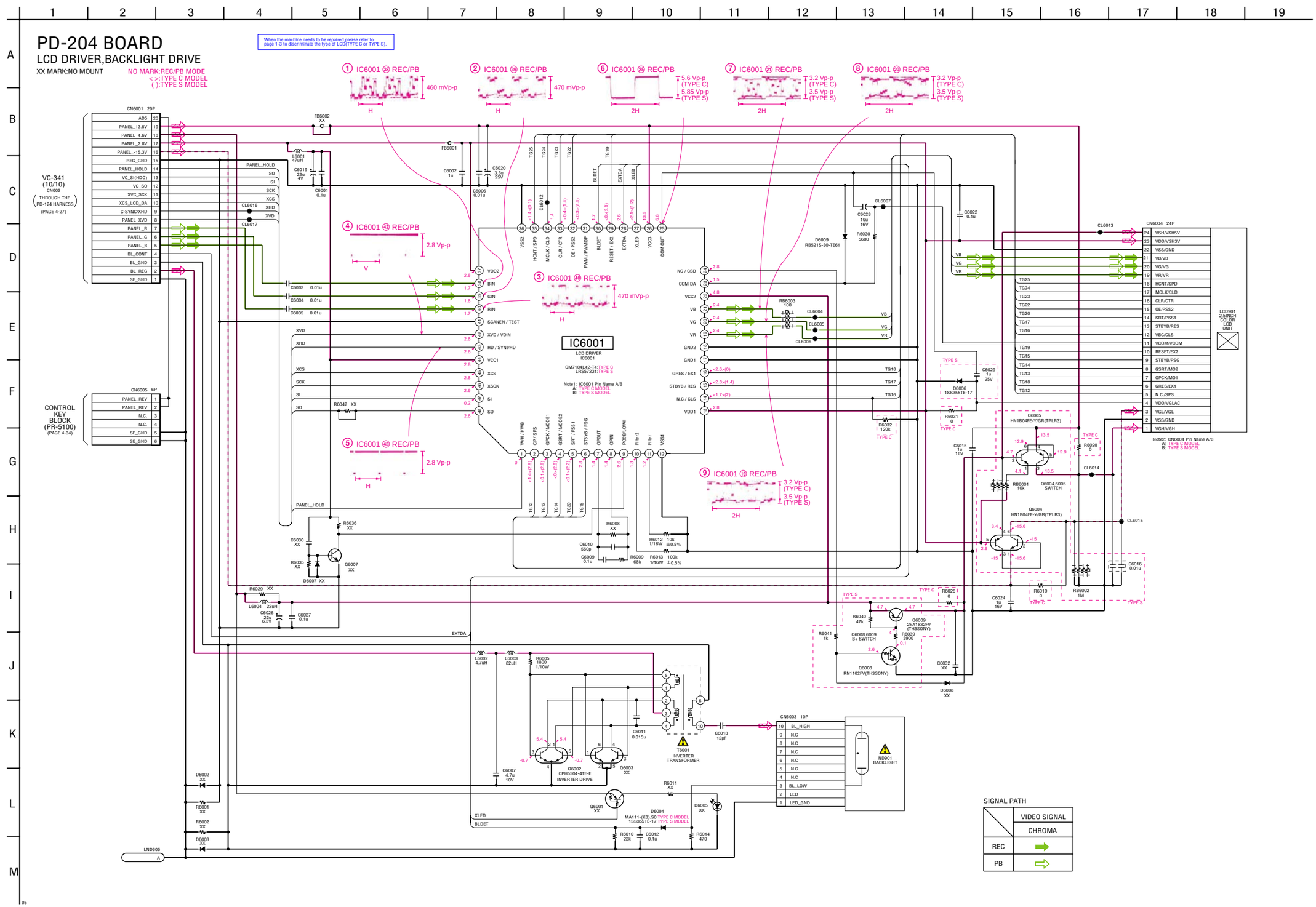
SIGNAL PATH

	REC	REC/PB	PB
Capstan speed servo		⇨	
Ref.signal	→		

4-2. SCHEMATIC DIAGRAMS | PD-204 BOARD

For Schematic Diagram

• Refer to page 4-47 for printed wiring board.



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For Schematic Diagram
• Refer to page 4-49 for printed wiring board.

SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡	➡	➡
PB	⇨	⇨	⇨	⇨

FP-792 FLEXIBLE BOARD
VIDEO LIGHT

D002 NSPW500BS-TL2
D001 NSPW500BS-TL2
D003 NSPW500BS-TL2
D001-003 (VIDEO LIGHT)
REG_GND
VL+
LAND1
STATIC_GND
STATIC_GND
LAND2
REG_GND

SI-039 BOARD
STEADYSHOT,JACK

XX MARK:NO MOUNT
NO MARK:REC/PB MODE

Note: D753, D754, IC751, J751, J752 and J753 are not included in SI-039 complete board.

C754 XX
R759 XX
R760 XX
R761 0
TRV328 /TRV428 /TRV428E
SE751 YAW SENSOR
SE752 PITCH SENSOR
C751 XX
R751 XX
C759 4.7u
C753 XX 4V
C755 XX 4V
C758 4.7u
C757 XX
R762 XX
R754 XX
FB751
VDR757 XX
IC751
REMOTE COMMANDER RECEIVER
IC751
RPM7240-V4
TRV228/TRV228E /TRV428/TRV428E
D759 TLRMV1021(T15SOY,F) (TALLY)
R763 1k
Q751 2SD2114KT146 LED DRIVE
D753 DAC3825 (IR EMITTER)
D754 DAC3825 (IR EMITTER)
R752 56
R753 56
R755 XX
C752 XX

J751 S VIDEO OUT
J752 A/V OUT
J753 RFU DC OUT
CGND
YGND
D755 RSE6.8XN-TR
D752 RSE6.8XN-TR
D751 RSE6.8XN-TR
LND751 STATIC_GND
LND752 STATIC_GND
FB752 XX

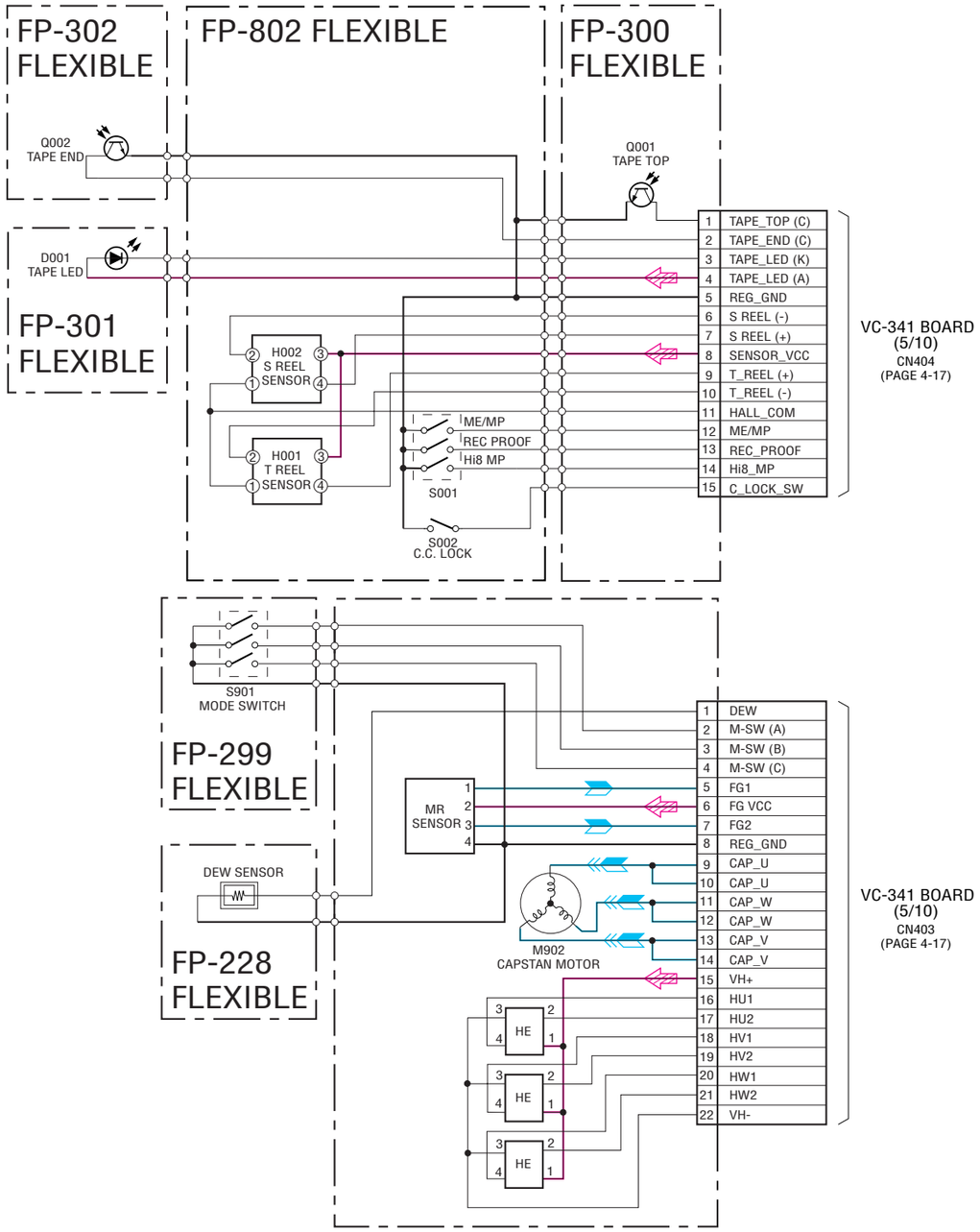
LND759
REG_GND
LND756
VL +
LND760
REG_GND
LND754
MIC_GND
LND755
INT_MIC
MIC901 MICROPHONE

CN755 30P

30	VL+
29	MIC_GND
28	MIC_GND
27	INT_MIC
26	LIA1
25	VREF1
24	LIA2
23	VREF2
22	A_2.8V
21	A_2.8V
20	XF_TALLY_LED
19	D_2.8V
18	XSIRCS_SIG
17	MT_5V
16	MT_5V
15	SIRCS_PWM/IR_DRV_EN
14	AV_JACK_IN
13	AUDIO_L_I/O
12	REG_GND
11	VIDEO_I/O
10	REG_GND
9	S_Y_I/O
8	REG_GND
7	XS_JACK_IN
6	REG_GND
5	S_C_I/O
4	REG_GND
3	RFU_DC
2	RFU_DC
1	DCOUT_JACK_IN

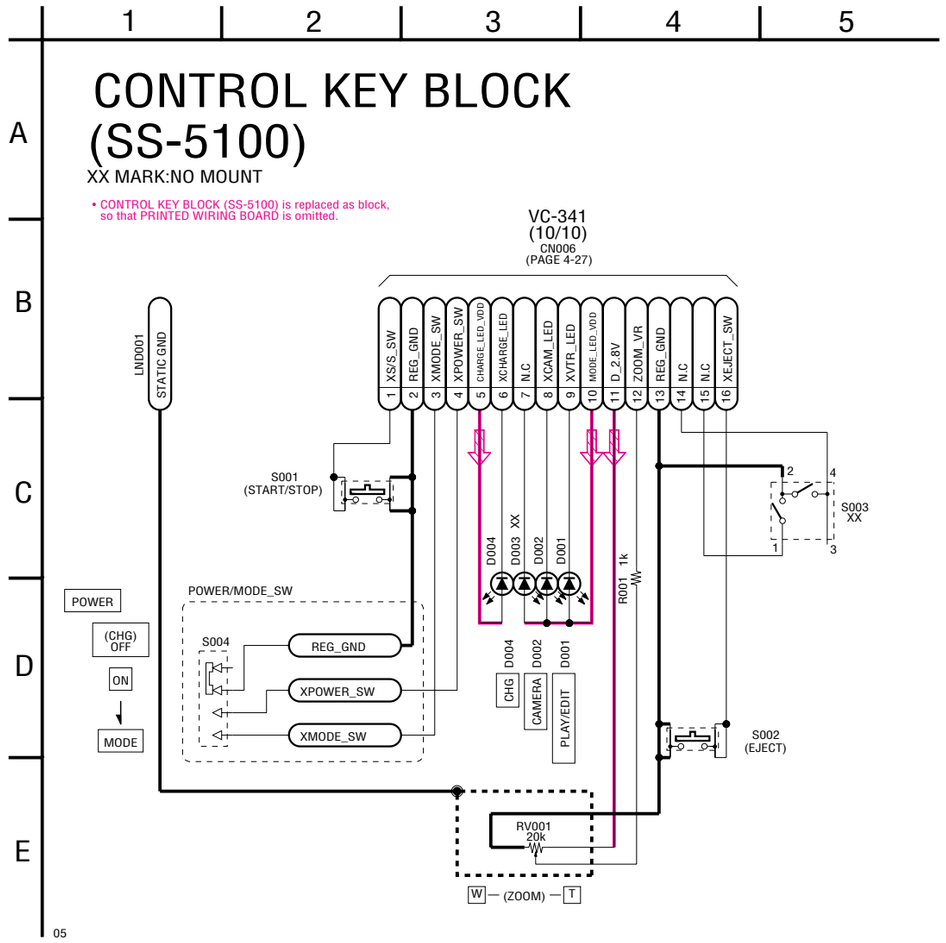
VC-341 (10/10)
CN009
(THROUGH THE FP-795 FLEXIBLE (PAGE 4-27))

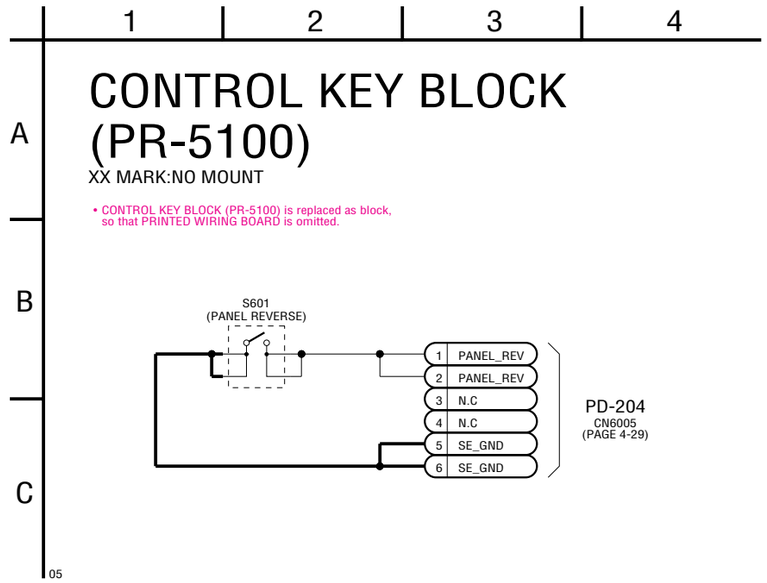
For Schematic Diagram
• Refer to page 4-51 for printed wiring board.



SIGNAL PATH

	REC	REC/PB	PB
Capstan speed servo		➤	
Capstan servo(speed and phase)		➤➤➤	



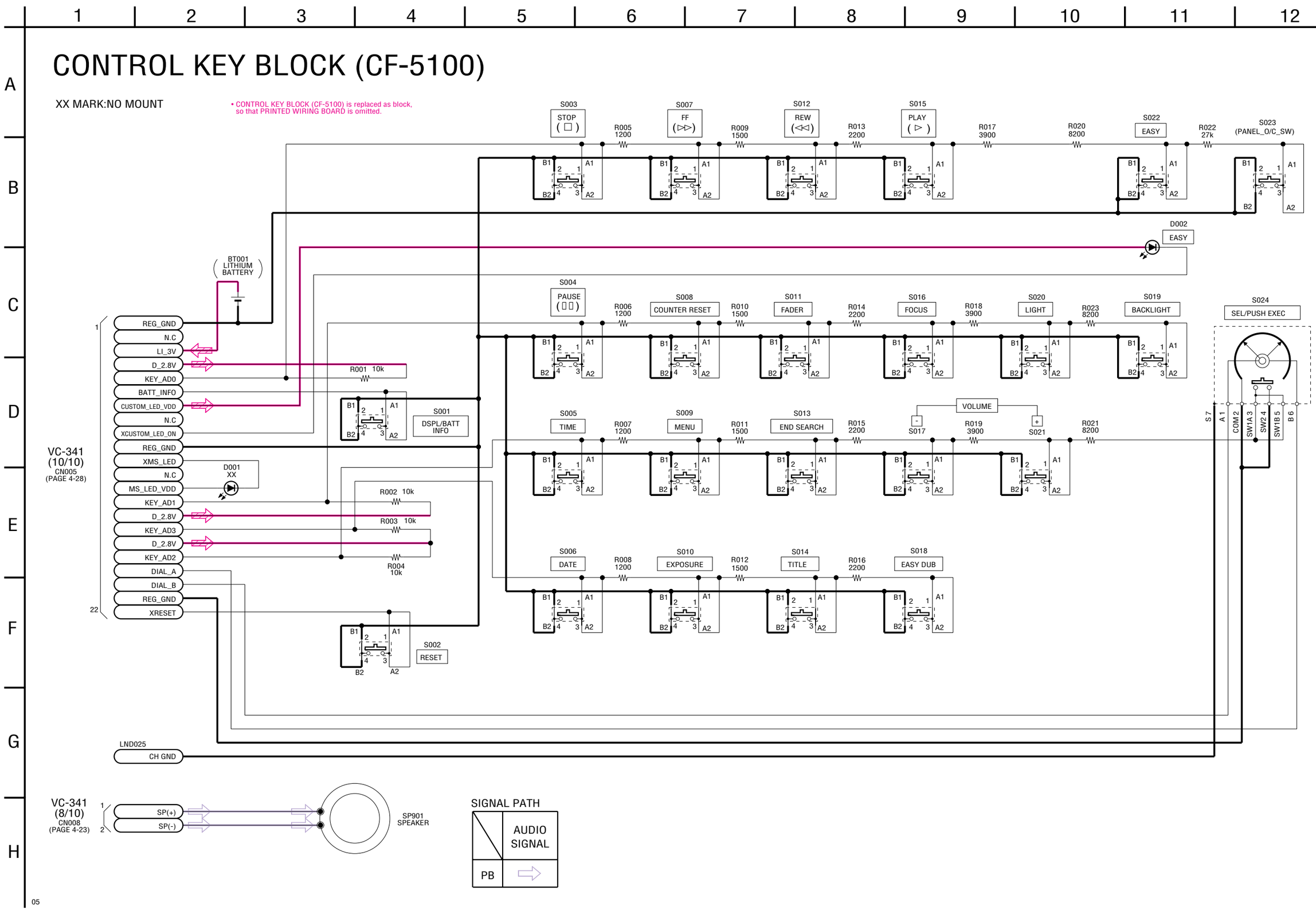


4-2. SCHEMATIC DIAGRAMS

CONTROL KEY BLOCK (CF-5100)

XX MARK:NO MOUNT

• CONTROL KEY BLOCK (CF-5100) is replaced as block, so that PRINTED WIRING BOARD is omitted.



4-3. PRINTED WIRING BOARDS

Link

- CD-465 BOARD
- SI-039 BOARD
- VC-341 BOARD (SIDE A)
- FP-792 FLEXIBLE BOARD
- VC-341 BOARD (SIDE B)
- FP-228, FP-299, FP-300, FP-301, FP-302, FP-802 FLEXIBLE BOARD
- PD-204 BOARD

- COMMON NOTE FOR PRINTED WIRING BOARDS
- MOUNTED PARTS LOCATION
- CIRCUIT BOARDS LOCATION
- FLEXIBLE BOARDS LOCATION

Board Name	Function
CD-465	CCD IMAGER
VC-341	A/D CONVERTER, TIMING GENERATOR, CAMERA/VTR PROCESS, LENS CONTROL, LENS DRIVE, REC/PB AMP, SERVO, CAMERA/MECHA CONTROL, HI CONTROL, AUDIO, VIDEO, DC CONTROL, STEADYSHOT, CONNECTOR
PD-204	LCD DRIVE, BACKLIGHT DRIVE
SI-039	STEADYSHOT, JACK

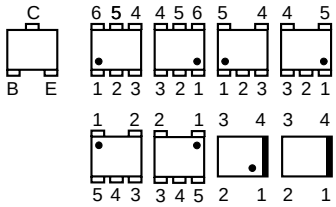
4-3. PRINTED WIRING BOARDS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS

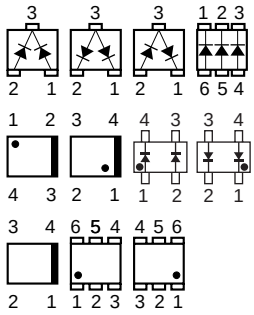
- : Uses unleaded solder.
- : Circuit board
  : Flexible board
  Pattern from the side which enables seeing.
  : pattern of the rear side
  (The other layers' patterns are not indicated)
- Through hole is omitted.
- Circled numbers refer to waveforms.
- There are a few cases that the part printed on diagram isn't mounted in this model.
- : panel designation

- Chip parts.

Transistor



Diode



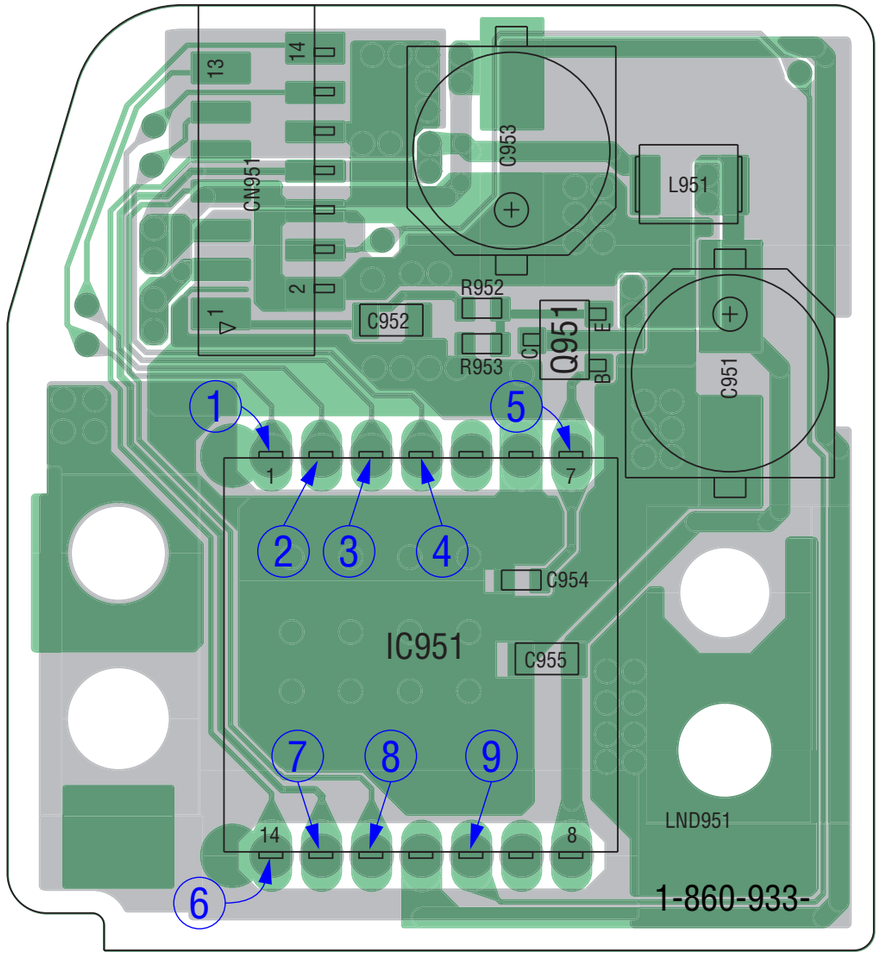
Board Name	Parts Location	Pattern	
		Total Number of Layers	Layers Not Indicated
CD-465	–	4 layers	2 to 3 layers
VC-341	4-53	4 layers	2 to 3 layers
PD-204	4-54	2 layers	–
SI-039	4-54	2 layers	–
FP-792 Flexible	–	1 layer	–
FP-228 Flexible	–	1 layer	–
FP-299 Flexible	–	1 layer	–
FP-300 Flexible	–	1 layer	–
FP-301 Flexible	–	1 layer	–
FP-302 Flexible	–	1 layer	–
FP-802 Flexible	–	1 layer	–

CD-465

Note for Printed Wiring Board (See page 4-39).

: Uses unleaded solder.

CD-465 BOARD



11 (21)

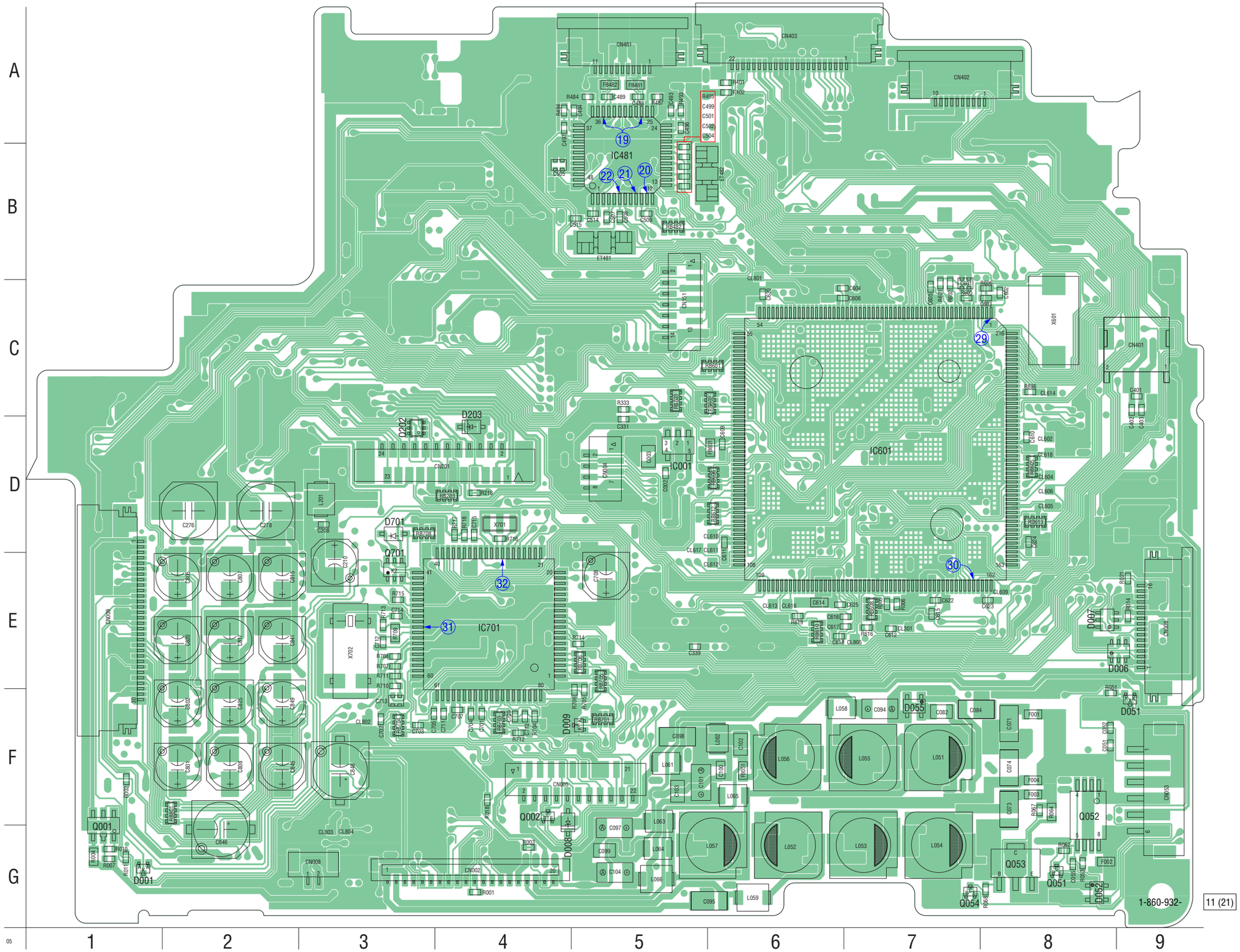
05

VC-341

Note for Printed Wiring Board (See page 4-39).

: Uses unleaded solder.

VC-341 BOARD (SIDE A)

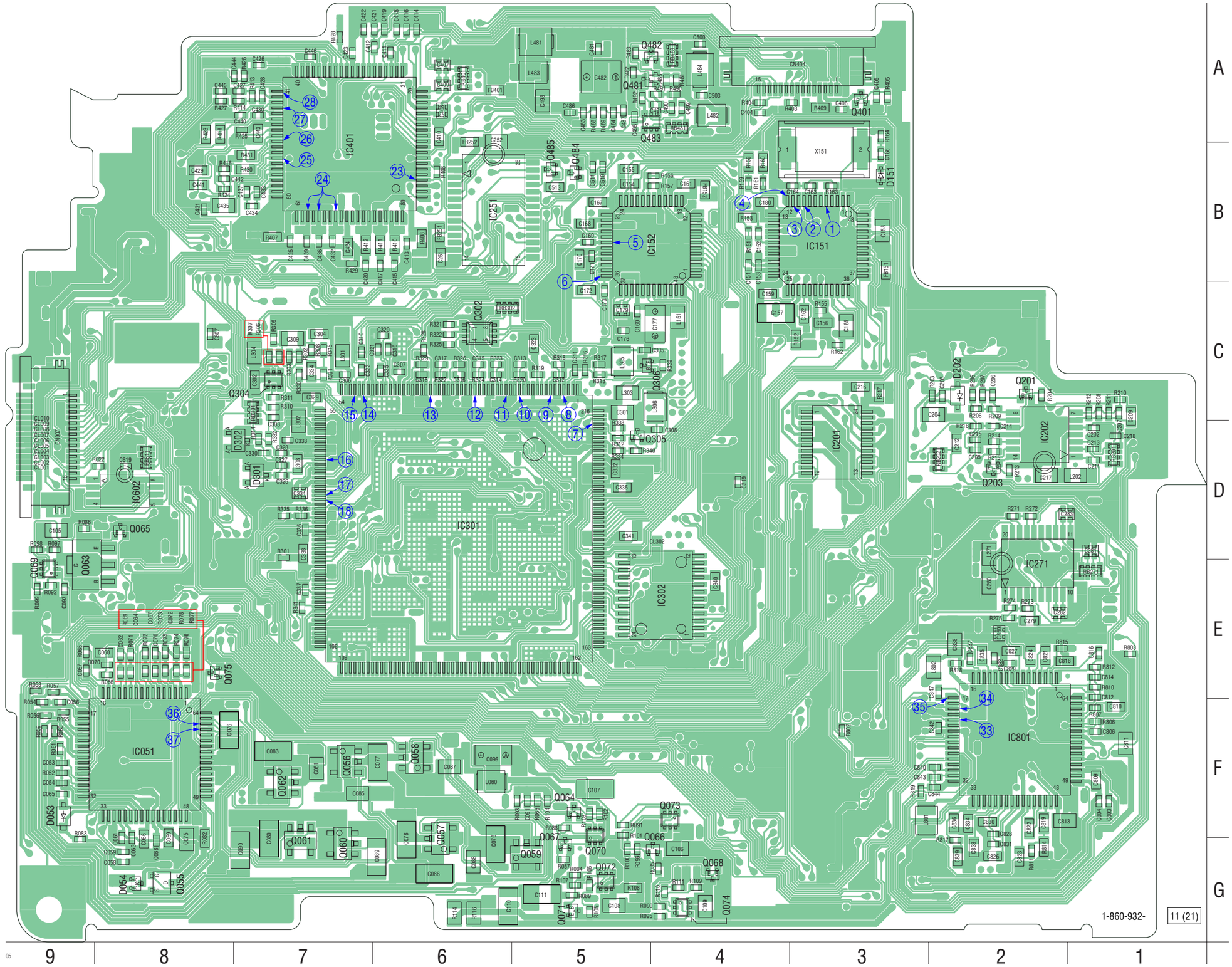


VC-341 (SIDE A)

Note for Printed Wiring Board (See page 4-39).

: Uses unleaded solder.

VC-341 BOARD (SIDE B)

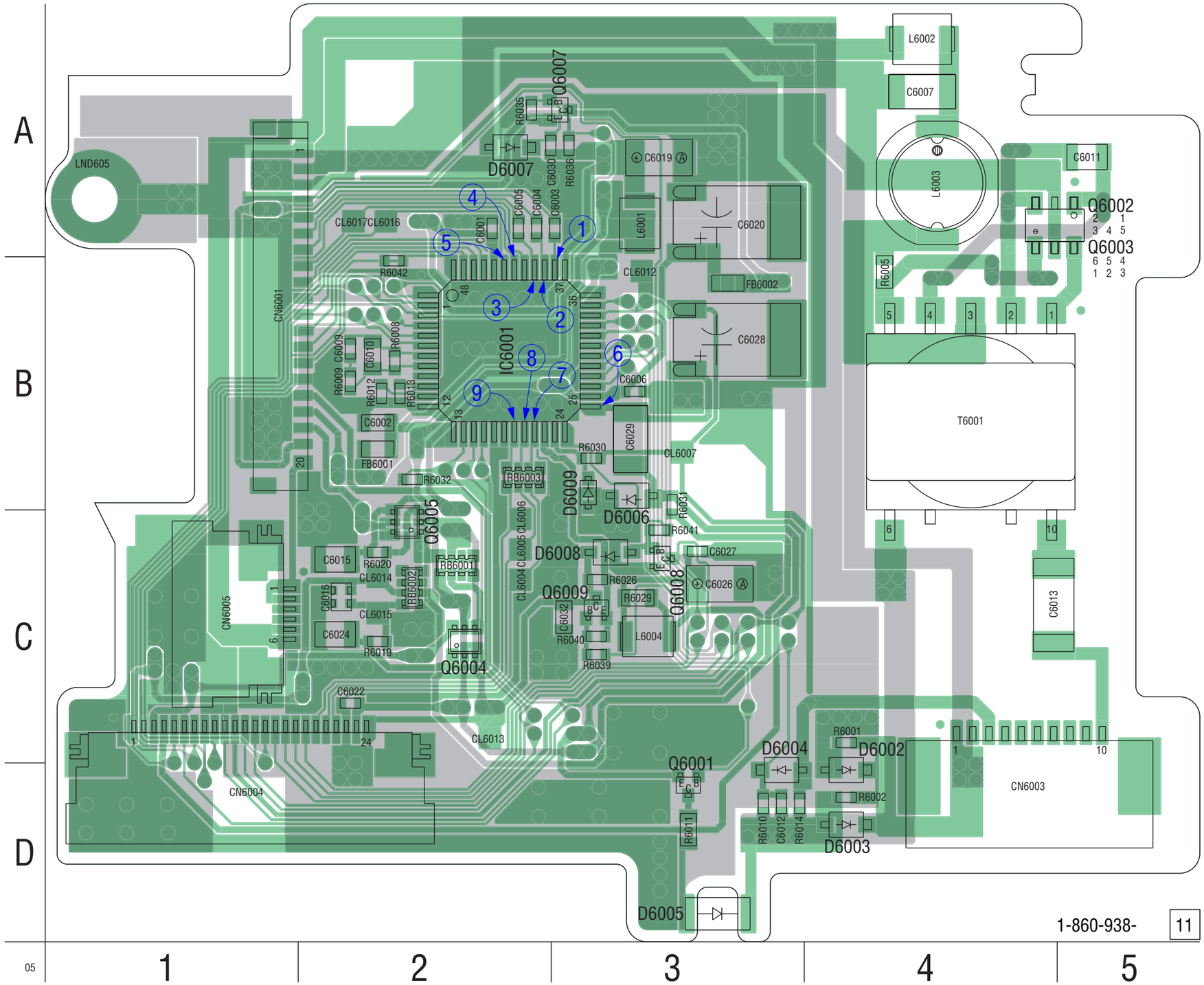


PD-204

Note for Printed Wiring Board (See page 4-39).

: Uses unleaded solder.

PD-204 BOARD

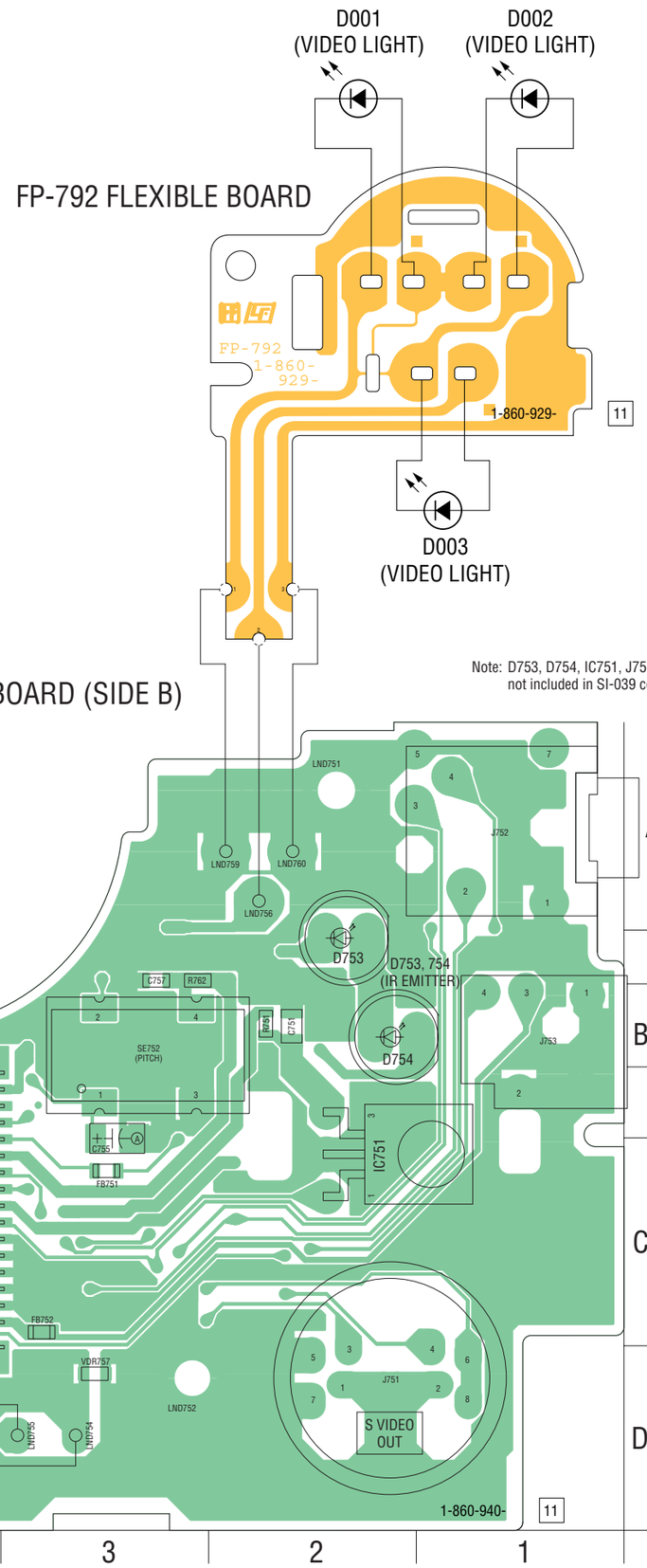


Note: Q6002 and Q6003 have the same mount location. When replacing Q6002 or Q6003, please refer to schematic diagram and electrical parts list.

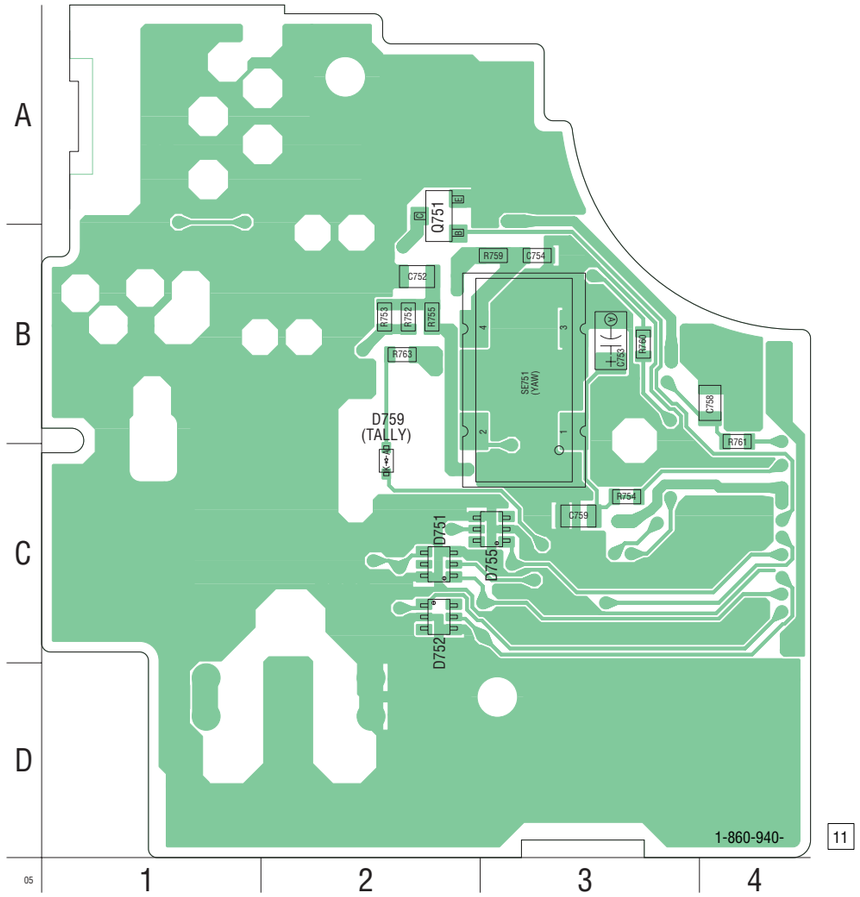
SI-039, FP-792 FLEXIBLE

Note for Printed Wiring Board (See page 4-39).

: Uses unleaded solder.



SI-039 BOARD (SIDE A)



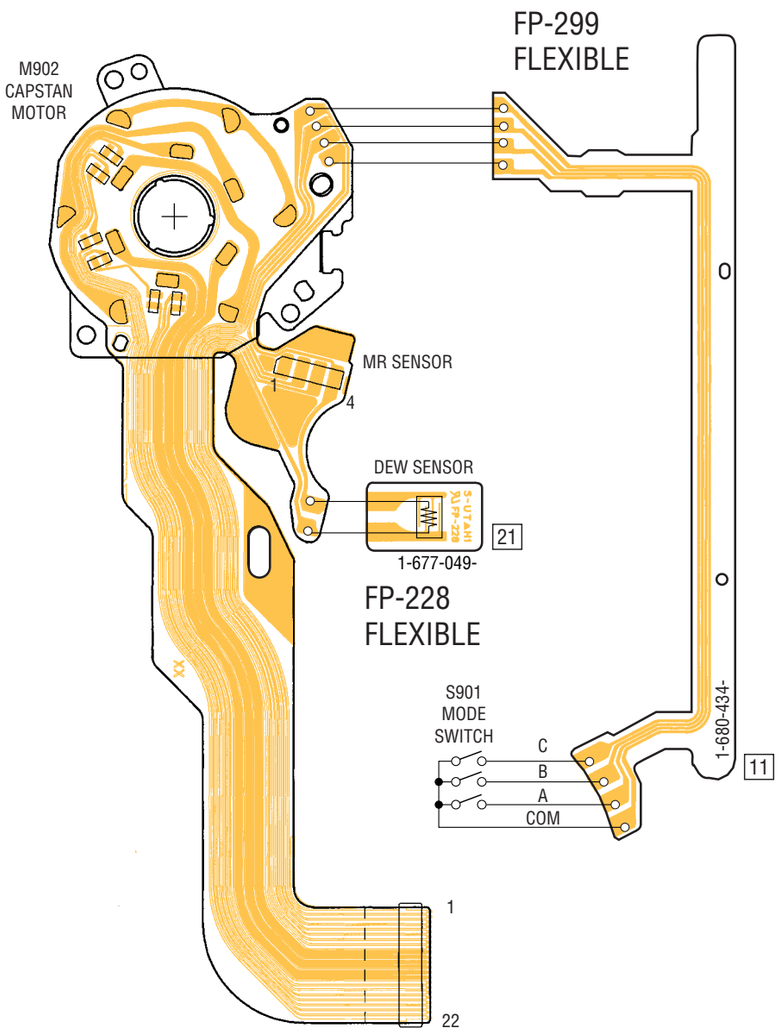
SI-039 BOARD (SIDE B)

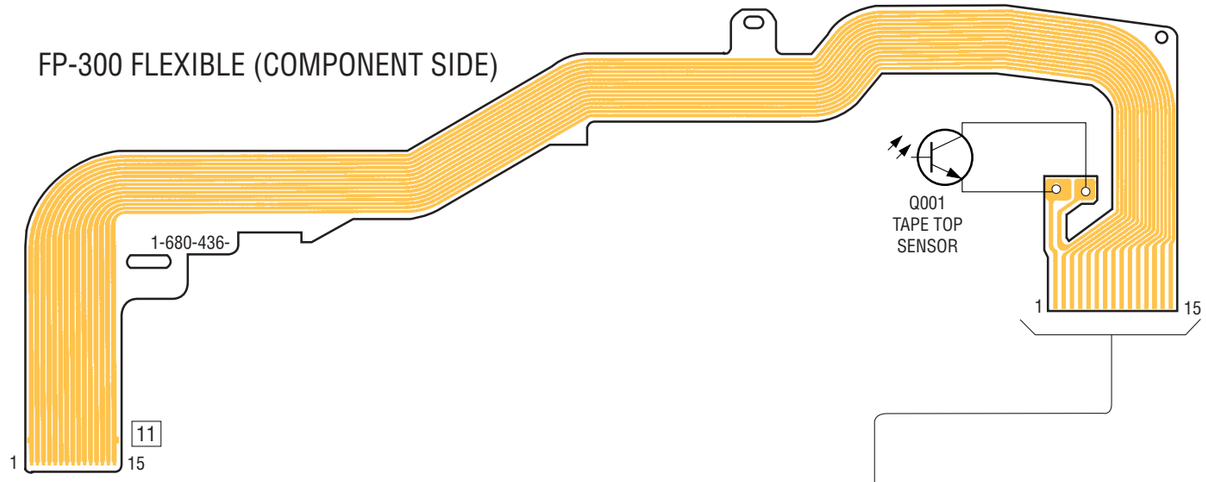
Note: D753, D754, IC751, J751, J752 and J753 are not included in SI-039 complete board.

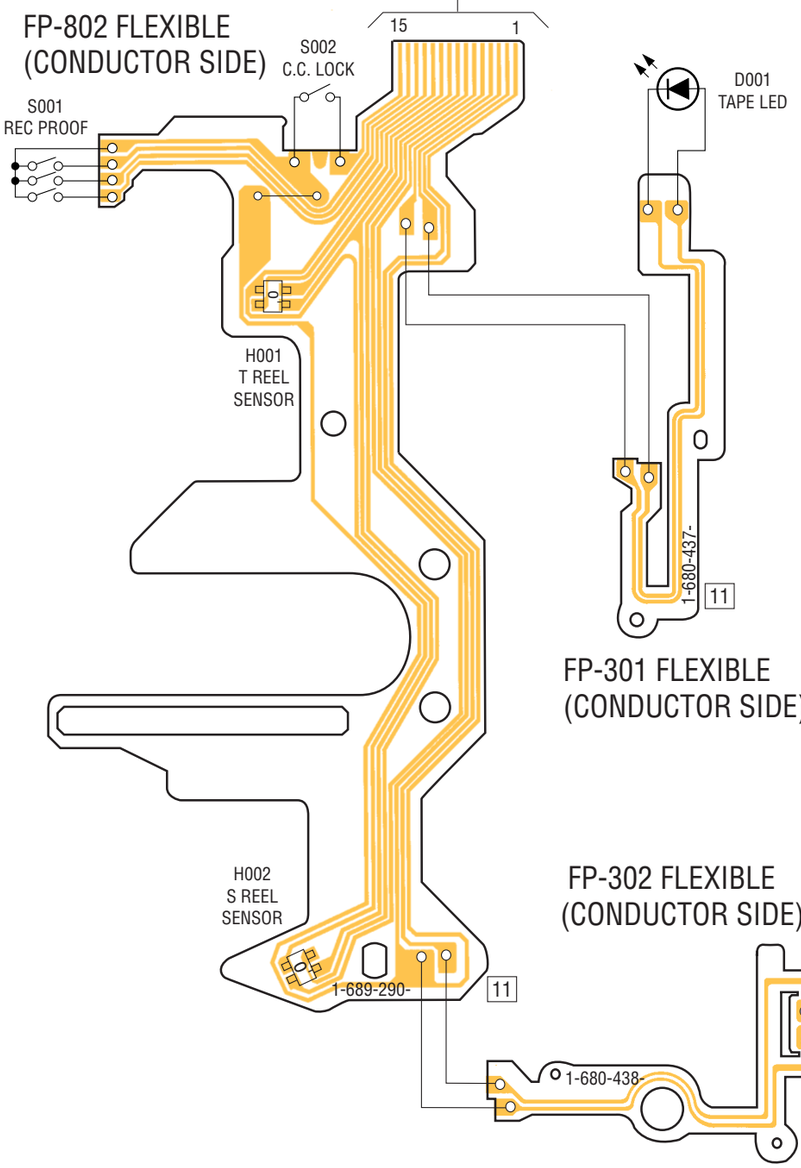
FP-228, FP-299, FP-300, FP-301, FP-302, FP-802 FLEXIBLE

Note for Printed Wiring Board (See page 4-39).

: Uses unleaded solder.







4-3. PRINTED WIRING BOARDS

4-4. MOUNTED PARTS LOCATION

no mark : side A
* mark : side B

VC-341 BOARD

C002	D-5	* C217	D-2	C509	B-5	CN401	C-9	Q002	F-4	* R096	G-5
C003	D-5	* C218	D-1	* C513	B-5	CN402	A-7	Q051	G-8	* R097	D-9
* C053	F-9	* C251	B-6	C514	B-5	CN403	A-6	Q052	F-8	* R098	D-9
* C054	F-9	* C252	A-6	C515	B-5	* CN404	A-3	Q053	G-8	* R099	E-9
C055	G-8	C276	D-2	C601	C-7	CN481	A-5	Q054	G-7	* R100	G-5
* C056	F-9	C278	D-2	C602	C-8			* Q055	G-8	* R101	F-5
* C057	E-9	* C280	E-2	C603	C-8	D001	G-1	* Q056	F-7	* R102	F-5
* C058	G-8	* C281	D-1	C604	C-6	D006	E-9	* Q057	G-6	* R103	F-5
* C059	G-8	* C282	E-2	C605	C-7	D007	E-8	* Q058	F-6	* R104	F-5
* C060	E-8	* C283	D-2	C606	C-6	D008	G-4	* Q059	G-5	* R105	G-5
* C062	E-8	* C301	C-5	* C607	C-8	D009	F-5	* Q060	G-7	* R106	G-5
* C063	G-8	* C302	C-7	C609	D-6	D051	F-9	* Q061	G-7	* R107	G-5
* C064	E-8	* C303	C-7	C610	D-8	D052	G-8	* Q062	F-7	* R109	G-4
* C065	F-9	* C304	C-7	C611	D-6	* D053	F-9	* Q063	E-9	* R110	G-4
* C066	G-8	* C306	C-7	C614	E-6	* D054	G-8	* Q064	F-5	* R111	G-4
* C067	E-8	* C307	C-6	C615	E-7	D055	F-7	* Q065	D-8	* R114	G-6
* C068	G-8	* C309	C-7	C616	E-7	* D151	B-3	* Q066	G-4	* R116	G-6
* C069	G-8	* C310	C-7	C617	E-7	* D202	C-2	* Q067	G-5	* R152	C-3
* C070	E-8	* C320	C-6	C618	E-6	* D301	D-7	* Q068	G-4	* R155	C-3
C071	F-8	* C322	C-7	* C619	D-8	* D302	D-7	* Q069	E-9	* R162	C-3
* C072	E-8	* C323	C-5	C620	C-6	D701	D-3	* Q070	G-5	* R163	B-3
C073	F-8	* C324	C-7	C622	E-7			* Q071	G-5	* R164	A-3
* C075	G-8	* C325	C-6	C623	E-8	F001	F-8	* Q072	G-5	* R203	C-2
* C076	F-8	* C326	D-7	C624	D-8	F002	G-8	* Q073	F-4	* R204	C-2
* C078	G-6	* C328	D-7	C708	E-5	F003	F-8	* Q074	G-4	* R205	C-2
* C079	G-6	* C329	C-7	C709	F-4	F004	F-8	* Q075	E-8	* R206	C-2
* C080	G-7	* C332	D-5	C710	F-4			* Q201	C-2	* R207	C-2
* C081	F-7	* C333	D-7	C711	F-4	FB051	F-6	Q202	D-3	* R208	C-1
C082	F-7	* C334	D-7	C712	E-3	* FB151	B-3	* Q203	D-2	* R209	C-2
* C083	F-7	* C335	D-5	C713	F-3	* FB152	B-4	* Q302	C-6	* R210	C-1
C084	F-7	C339	E-5	C714	E-3	* FB251	B-6	* Q304	C-7	* R211	C-1
* C085	F-7	C401	C-9	C715	D-4	* FB252	A-6	* Q306	C-5	* R212	C-1
* C086	G-6	* C404	A-4	C801	F-2	* FB401	A-6	* Q401	A-3	* R213	D-2
* C087	F-6	* C406	A-3	C802	F-2	FB481	A-5	* Q481	A-5	* R214	D-2
* C088	G-6	* C407	A-6	C805	E-2	FB482	A-5	* Q482	A-4	* R215	D-2
* C089	G-6	* C408	A-6	* C806	F-1	FB601	D-6	* Q483	A-4	* R216	D-2
* C090	G-7	* C409	A-6	C807	E-2			* Q484	B-5	* R271	D-2
* C091	F-5	* C410	A-6	C808	F-2	IC001	D-5	* Q485	B-5	* R272	D-2
C094	F-7	* C411	A-6	* C810	F-1	* IC051	F-8	Q701	E-3	* R273	E-2
C095	G-6	* C412	A-6	* C811	F-1	* IC151	B-3			* R274	E-2
* C096	F-6	* C413	B-6	* C812	E-1	* IC152	B-4	R001	G-4	* R302	C-7
C097	G-5	* C415	B-6	* C814	E-1	* IC201	D-3	R002	F-1	* R303	C-7
C098	F-5	* C417	B-6	C815	E-2	* IC202	D-2	R004	G-1	* R306	C-7
C099	G-5	* C420	B-7	* C816	E-1	* IC251	B-6	R005	E-7	* R307	C-7
C100	F-6	* C423	A-7	C817	E-2	* IC271	E-2	R006	E-7	* R308	C-7
C102	F-6	* C424	B-7	* C818	E-2	* IC301	D-6	R007	G-1	* R309	C-7
C103	F-5	* C425	B-7	* C819	F-2	* IC302	E-4	R010	G-1	* R310	C-7
C104	G-5	* C426	A-7	C820	E-2	* IC401	B-7	R011	G-1	* R311	C-7
* C105	D-9	* C427	A-7	* C821	E-2	IC481	B-5	R014	E-9	* R314	D-7
* C106	G-4	* C428	A-7	* C822	F-2	IC601	D-7	R018	F-4	* R315	C-7
* C107	F-5	* C429	B-8	* C823	G-2	* IC602	D-8	R021	E-9	* R316	C-5
* C108	G-5	* C430	A-7	C825	F-2	IC701	E-4	* R022	D-8	* R317	C-5
* C109	G-4	* C431	B-8	* C826	G-2	* IC801	F-2	R051	F-8	* R318	C-5
* C152	B-4	* C432	B-7	* C828	F-2			* R052	F-9	* R319	C-5
* C156	C-3	* C433	B-7	* C829	E-2	L051	F-7	R053	G-8	* R320	C-5
* C157	C-4	* C434	B-7	* C830	F-2	L052	G-6	* R054	F-9	* R321	C-6
* C158	B-3	* C435	B-8	* C831	G-2	L053	G-7	* R061	F-9	* R322	C-6
* C160	C-5	* C436	B-7	* C832	E-2	L054	G-7	R062	G-8	* R323	C-6
* C161	B-4	* C437	B-7	* C833	G-2	L055	F-7	* R063	F-5	* R324	C-6
* C163	B-3	* C439	B-7	* C834	F-2	L056	F-6	R064	F-8	* R325	C-6
* C164	B-3	* C441	B-8	* C835	E-2	L057	G-6	* R065	E-9	* R327	C-6
* C165	C-3	* C442	B-8	* C836	F-2	L058	F-6	* R066	E-8	* R328	C-6
* C166	B-3	* C443	A-7	* C837	E-2	L059	G-6	R067	F-8	* R330	C-7
* C167	B-5	* C444	A-7	* C839	G-2	* L060	F-6	R068	G-8	* R331	C-7
* C168	B-5	* C445	A-8	* C840	F-3	L061	F-5	* R069	E-8	* R332	D-7
* C169	B-5	* C481	A-5	C841	E-2	L062	F-6	* R070	E-8	R333	C-5
* C170	B-5	* C482	A-5	* C842	F-2	L063	F-5	* R071	E-8	* R334	D-5
* C171	B-5	* C483	A-5	* C843	F-2	L064	G-5	* R072	E-8	* R335	D-7
* C172	C-5	* C484	A-5	* C844	F-2	L065	F-6	* R073	E-8	* R336	D-7
* C173	C-5	* C486	A-5	C845	F-2	L066	G-5	* R074	E-8	* R339	C-4
* C176	C-5	* C487	A-5	C846	G-2	* L151	C-4	* R075	E-8	* R341	E-7
* C177	C-4	C488	A-5	* C847	E-2	L201	D-3	* R076	E-8	R401	A-6
* C179	C-5	C489	A-5	C848	F-3	* L202	D-1	* R077	E-8	R402	A-6
* C202	D-1	* C490	A-4	C849	F-2	* L271	D-2	* R078	E-8	* R403	A-3
* C203	C-2	* C491	A-4	* C850	E-2	* L301	C-7	* R082	G-8	* R404	A-4
* C204	C-2	* C492	A-4			* L302	D-7	* R083	F-9	* R405	A-3
* C205	D-2	C493	A-5	CN002	G-4	* L303	C-5	* R085	G-4	* R409	A-3
* C206	C-2	C494	A-5	CN004	D-5	* L304	C-7	* R086	D-9	* R410	B-6
* C207	C-1	* C495	A-5	CN005	F-5	* L308	D-7	* R087	G-5	* R411	B-6
C208	D-3	C496	A-5	CN006	E-9	* L481	A-5	* R089	G-5	* R412	B-7
* C209	C-1	C497	A-4	* CN007	D-9	* L482	A-4	* R090	G-4	* R413	A-7
C210	E-3	* C498	A-5	CN008	G-3	* L483	A-5	* R091	F-5	* R414	A-7
* C211	D-1	* C500	A-4	CN009	E-1	* L484	A-4	* R092	E-9	* R424	B-8
* C212	D-2	C505	B-4	CN053	F-9	* L801	F-3	* R093	F-5	* R426	A-7
* C214	D-2	C507	B-5	CN151	C-5			* R094	G-5	* R427	A-8
* C215	D-2	C508	B-5	CN201	D-4	Q001	G-1	* R095	G-4	* R431	B-7

4-3. PRINTED WIRING BOARDS

no mark : side A
* mark : side B

PD-204 BOARD

*	R481	A-4
*	R482	A-5
*	R483	A-5
	R484	A-5
	R487	A-5
*	R488	A-5
*	R489	A-5
*	R490	A-4
*	R491	A-4
*	R492	A-5
	R493	A-5
	R494	A-4
	R495	B-5
	R601	C-7
	R602	C-7
	R616	E-7
	R619	E-6
	R636	C-8
	R704	F-4
	R707	E-3
	R708	E-3
	R709	E-3
	R710	E-3
	R711	E-3
	R712	F-4
	R713	E-3
	R714	E-5
	R715	E-3
	R716	D-4
	R717	D-4
	R718	D-4
*	R806	F-1
*	R807	F-1
*	R810	E-1
*	R811	G-2
*	R812	E-1
*	R815	E-2
*	R817	G-2
*	R818	E-2
*	R819	F-3
*	RB201	D-1
*	RB202	D-2
	RB203	D-4
*	RB271	E-1
*	RB301	C-7
*	RB302	C-6
*	RB401	A-6
*	RB481	A-4
	RB482	B-5
*	RB483	A-4
	RB601	C-6
	RB605	D-8
	RB606	D-6
	RB608	E-7
	RB610	E-6
*	RB611	D-8
	RB612	D-6
	RB613	D-8
	RB701	F-5
	RB703	F-4
	RB704	F-3
	RB705	E-5
	RB706	E-5
	RB708	D-3
	RB801	F-2
*	X151	B-3
	X601	C-8
	X701	D-4
	X702	E-3

	C6001	A-2
	C6002	B-2
	C6003	A-3
	C6004	A-2
	C6005	A-2
	C6006	B-3
	C6007	A-4
	C6009	B-2
	C6010	B-2
	C6011	A-5
	C6012	D-3
	C6013	C-4
	C6015	C-2
	C6016	C-2
	C6019	A-3
	C6020	A-3
	C6022	C-2
	C6024	C-2
	C6026	C-3
	C6027	C-3
	C6028	B-3
	C6029	B-3
	CN6001	B-1
	CN6003	D-4
	CN6004	D-1
	CN6005	C-1
	D6004	D-3
	D6006	B-3
	D6009	B-3
	FB6001	B-2
	IC6001	B-2
	L6001	A-3
	L6002	A-4
	L6003	A-4
	L6004	C-3
	Q6002	A-4
	Q6004	C-2
	Q6005	C-2
	Q6008	C-3
	Q6009	C-3
	R6005	B-4
	R6009	B-2
	R6010	D-3
	R6012	B-2
	R6013	B-2
	R6014	D-3
	R6019	C-2
	R6020	C-2
	R6026	C-3
	R6030	B-3
	R6031	B-3
	R6032	B-2
	R6039	C-3
	R6040	C-3
	R6041	C-3
	RB6001	C-2
	RB6002	C-2
	RB6003	B-2
	T6001	B-4

SI-039 BOARD

	C758	B-4
	C759	C-3
*	CN755	C-4
	D751	C-2
	D752	C-2
*	D753	B-2
*	D754	B-2
	D755	C-3
	D759	C-2
*	FB751	C-3
*	IC751	C-2
*	J751	D-2
*	J752	A-1
*	J753	B-1
	Q751	A-2
	R752	B-2
	R753	B-2
	R761	B-4
	R763	B-2
	SE751	B-3
*	SE752	B-3

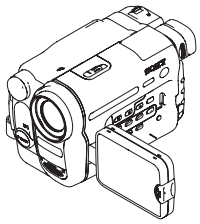
NOTE

5. REPAIR PARTS LIST

NOTE: Characters A to L of the electrical parts list indicate location of exploded views in which the desired part is shown.

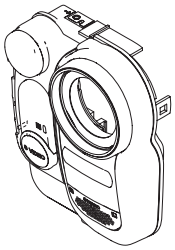
Link

EXPLODED VIEWS



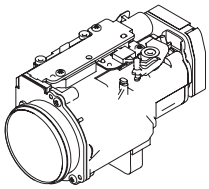
A

OVERALL ASSEMBLY



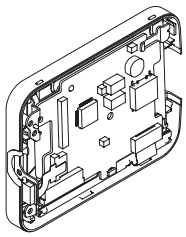
B

FRONT PANEL BLOCK



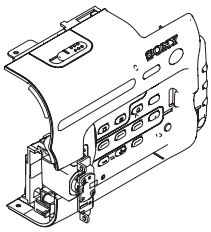
C

LENS BLOCK



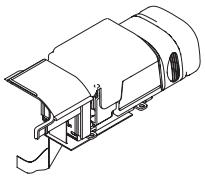
D

LCD BLOCK



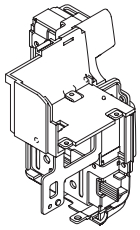
E

CABINET R BLOCK



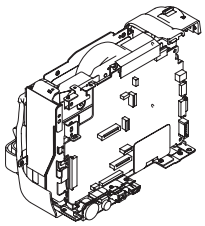
F

EVF BLOCK



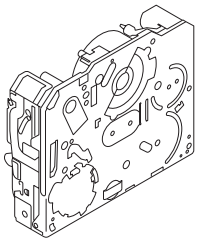
G

BATTERY PANEL BLOCK



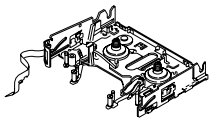
H

MD FRAME BLOCK



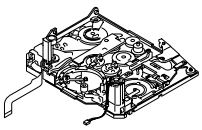
I

CASSETTE COMPARTMENT ASSEMBLY, DRUM ASSEMBLY



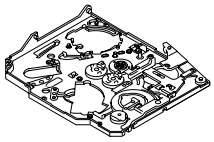
J

LS CHASSIS BLOCK ASSEMBLY



K

MECHANICAL CHASSIS BLOCK ASSEMBLY-1



L

MECHANICAL CHASSIS BLOCK ASSEMBLY-2

Link

ELECTRICAL PARTS LIST

ACCESSORIES

CD-465 BOARD C	FP-792 FLEXIBLE BOARD B	SI-039 BOARD B
FP-300 FLEXIBLE BOARD J	FP-802 FLEXIBLE BOARD J	VC-341 BOARD H
FP-301 FLEXIBLE BOARD J	PD-204 BOARD (TYPE C) D	
FP-302 FLEXIBLE BOARD J	PD-204 BOARD (TYPE S) D	

5. REPAIR PARTS LIST

NOTE:

- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- CAPACITORS:
  uF: µF
- COILS
  uH: µH
- RESISTORS
  All resistors are in ohms.
  METAL: metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA...: µA... , uPA... , µPA... ,
  uPB... , µPB... , uPC... , µPC... ,
  uPD..., µPD...
- Abbreviation
  AR : Argentine model
  AUS : Australian model
  BR : Brazilian model
  CND : Canadian model
  EE : East European model
  HK : Hong Kong model
  JE : Tourist model
  NE : North European model

When indicating parts by reference number, please include the board name.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

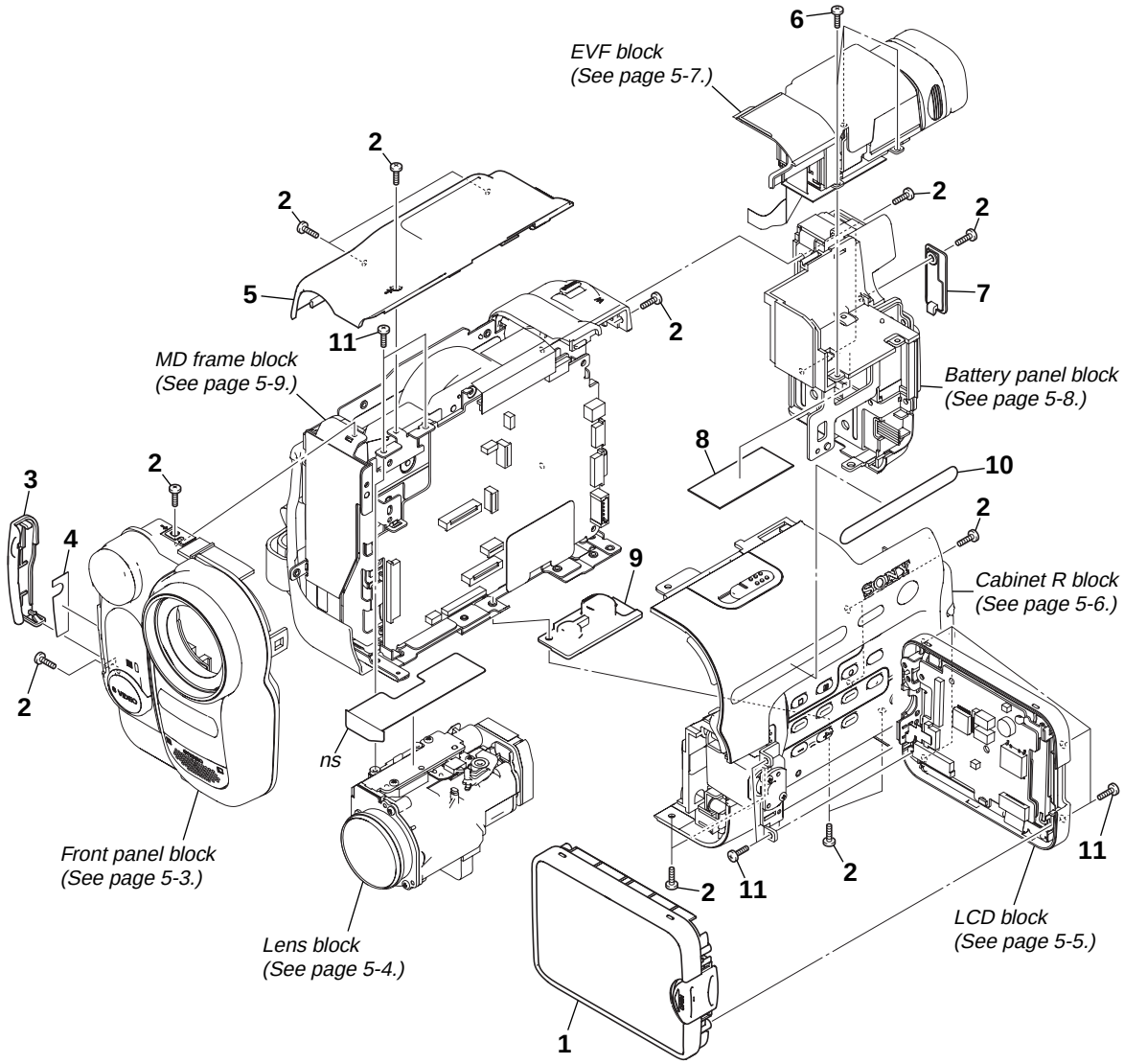
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

About PD-204 board and LCD module, discriminate LCD type on the machine referring to page 1-3, and replace the same type.

5. REPAIR PARTS LIST

5-1. EXPLODED VIEWS

5-1-1. OVERALL ASSEMBLY



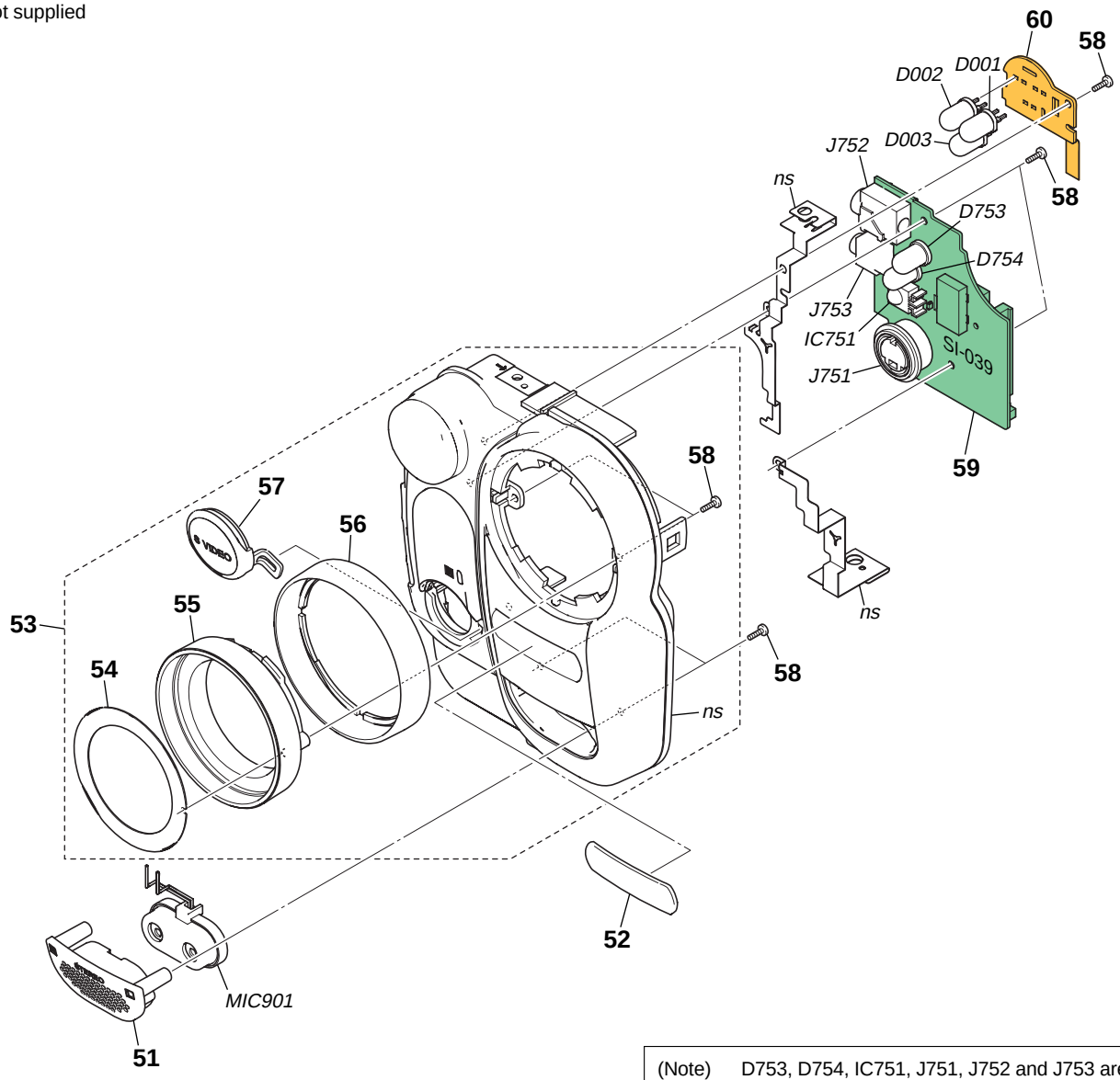
Ref. No.	Part No.	Description
1	X-3953-964-1	CABINET (C) (515) ASSY, P
2	3-080-203-31	SREW (M2), LOCK ACE, P2
3	3-087-813-01	COVER (51), JACK
4	3-087-812-01	SHEET (51), JACK
5	3-087-811-01	CABINET (UPPER) (51)
6	3-078-889-11	SCREW (M1.7)
7	3-087-810-01	LID (51), CPC
8	CAUTION	RETAINER (51), EVF FLEXIBLE
9	3-079-012-01	SCREW (30), TRIPOD
10	3-087-831-01	LABEL (51) (TRV128/TRV228/TRV228E)
10	3-087-831-11	LABEL (51) (TRV328/TRV428/TRV428E)
11	3-080-204-21	SCREW TAPPING, P2

CAUTION :
For the part of 8 : RETAINER (51), EVF FLEXIBLE (3-088-616-01), cut WOVEN (T0.25), FABRIC NON (3-076-631-01) into the desired length and use it.

5. REPAIR PARTS LIST

5-1-2. FRONT PANEL BLOCK

ns: not supplied



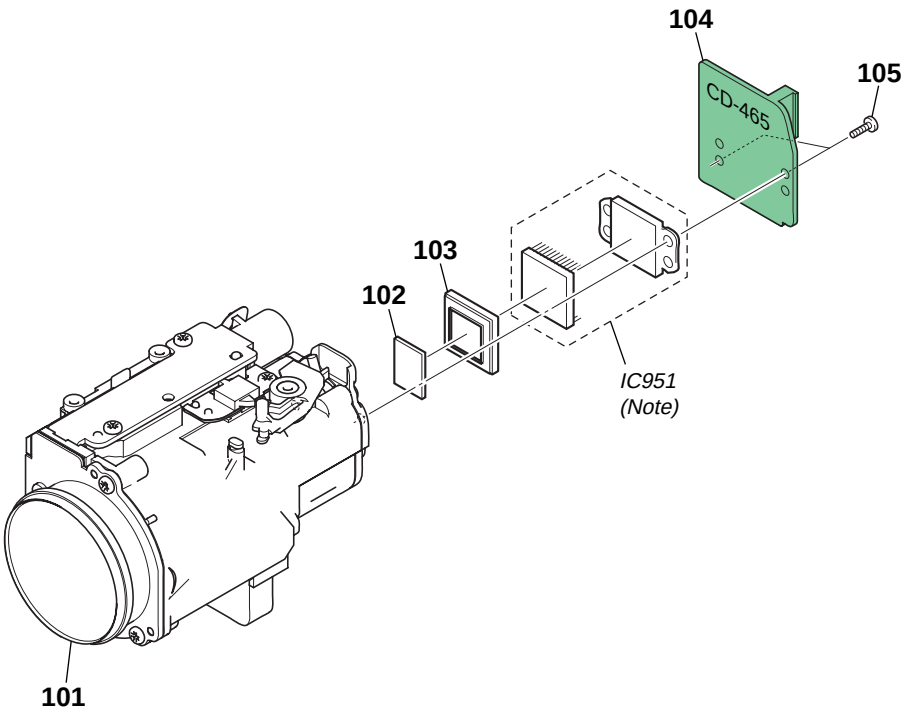
(Note) D753, D754, IC751, J751, J752 and J753 are not included in SI-039 complete board.

Ref. No.	Part No.	Description
51	3-087-738-01	RETAINER (51), MICROPHONE
52	3-087-740-01	PLATE (51), MAGNIFICATION
53	X-3953-959-1	PANEL (515) ASSY, FRONT (TRV228/TRV228E)
53	X-3953-960-1	PANEL (520) ASSY, FRONT (TRV328)
53	X-3953-961-1	PANEL (525) ASSY, FRONT (TRV428E)
53	X-3954-020-1	PANEL (510) ASSY, FRONT (TRV128)
54	3-087-739-01	PLATE (51), NAME
55	3-087-743-01	SCREW (51), FILTER
56	3-087-742-01	RING (51), FRONT
57	3-087-749-01	COVER (51), S TERMINAL
58	3-080-204-21	SCREW, TAPPING, P2
59	A-7111-950-A	SI-039 BOARD, COMPLETE (Note) (TRV128/TRV228/TRV228E)
59	A-7111-951-A	SI-039 BOARD, COMPLETE (Note) (TRV328/TRV428/TRV428E)

Ref. No.	Part No.	Description
60	1-860-929-11	FP-792 FLEXIBLE BOARD
D001	6-500-744-01	DIODE NSPW500BS-TL2 (VIDEO LIGHT)
D002	6-500-744-01	DIODE NSPW500BS-TL2 (VIDEO LIGHT)
D003	6-500-744-01	DIODE NSPW500BS-TL2 (VIDEO LIGHT)
D753	8-719-060-65	DIODE DCC3810 (IR EMITTER) (Note)
D754	8-719-060-65	DIODE DCC3810 (IR EMITTER) (Note)
IC751	6-704-975-01	IC RPM7240-V4 (TRV228/TRV228E/TRV428/TRV428E)
J751	1-778-518-11	CONNECTOR, EXTERNAL (S VIDEO OUT) (Note)
J752	1-778-040-11	JACK, SMALL TYPE (A/V OUT) (Note)
J753	1-817-944-11	JACK, SMALL TYPE (RFU DC OUT) (Note)
MIC901	1-542-567-11	MICROPHONE

5. REPAIR PARTS LIST

5-1-3. LENS BLOCK

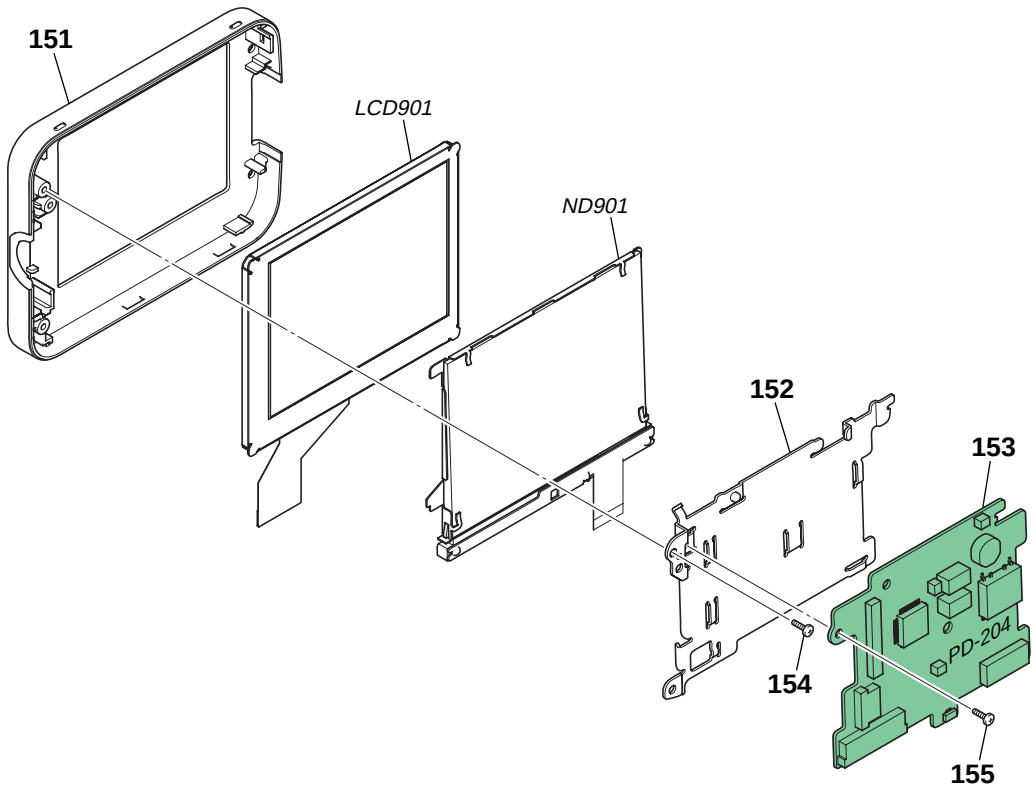


(Note) Be sure to read “Precuations for Replacement of CCD Imager” on page 4-8 when changing the CCD imager.

Ref. No.	Part No.	Description
101	8-848-765-01	DEVICE, LENS LSV-820A
102	1-758-865-11	FILTER BLOCK OPTICS
103	3-053-973-01	RUBBER (W), SEAL
104	A-7111-944-A	CD-465 BOARD, COMPLETE (TRV228E/TRV428E)
104	A-7111-945-A	CD-465 BOARD, COMPLETE (TRV128/TRV228/TRV328/TRV428)
105	3-080-204-21	SCREW, TAPPING, P2
IC951	A-7013-219-A	CCD BLOCK ASSY (CCD IMAGER) (TRV128/TRV228/TRV328/TRV428) (Note)
IC951	A-7013-276-A	CCD BLOCK ASSY (CCD IMAGER) (TRV228E/TRV428E) (Note)

5. REPAIR PARTS LIST

5-1-4. LCD BLOCK



(Note) About PD-204 board and LCD module, discriminate LCD type on the machine referring to page 1-3, and replace the same type.

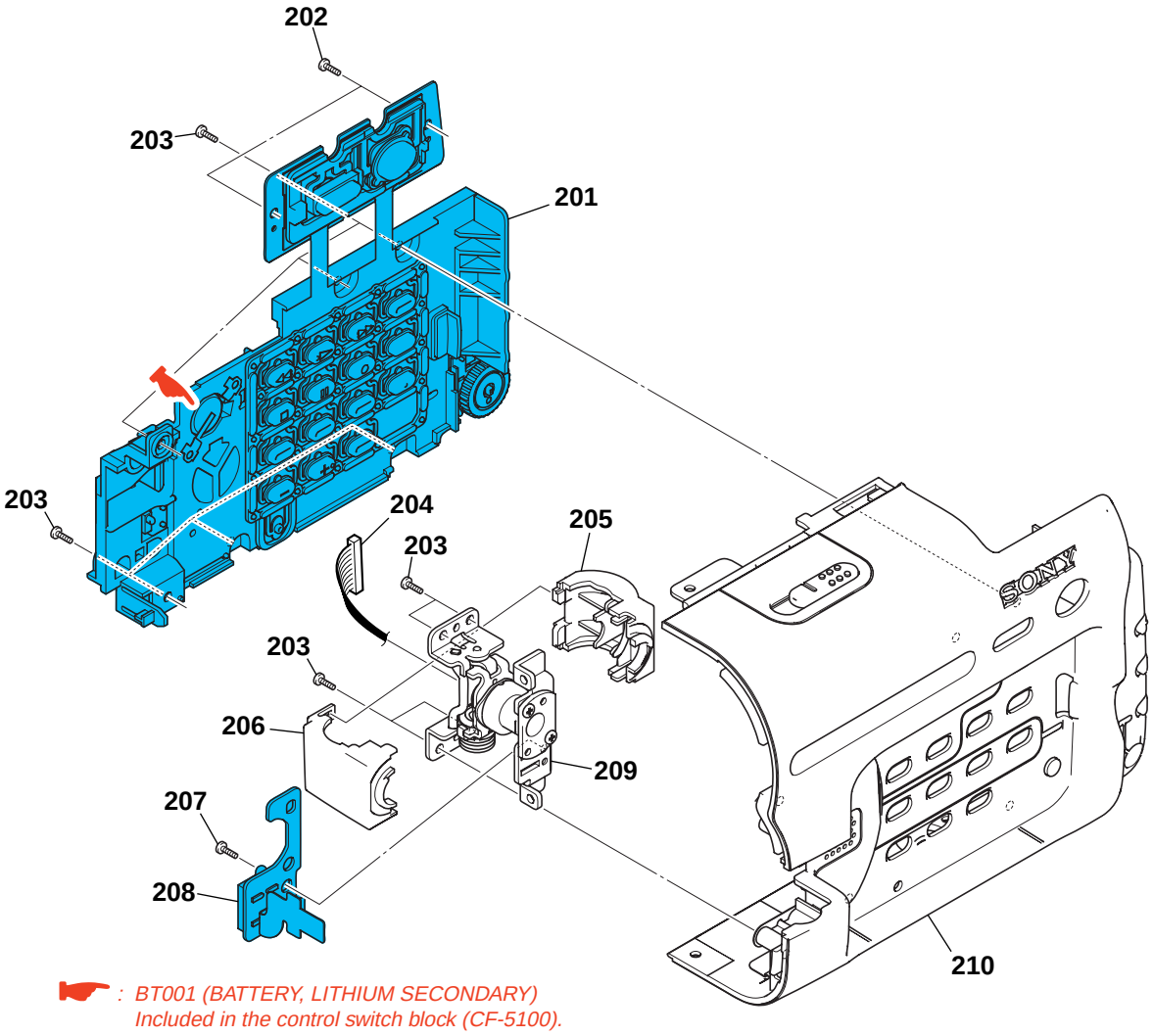
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description
151	3-087-780-01	CABINET (M) (51), P
152	3-087-781-01	FRAME (51), PANEL
153	A-7111-949-A	PD-204 BOARD, COMPLETE (TYPE C) (Note)
153	A-7111-948-A	PD-204 BOARD, COMPLETE (TYPE S) (Note)
154	3-080-204-21	SCREW, TAPPING, P2
155	3-078-889-11	SCREW (M1.7)

Ref. No.	Part No.	Description
LCD901	1-805-137-51	INDICATOR MODULE LIQUID CRYSTAL (TYPE S) (Note)
LCD901	1-805-138-21	INDICATOR MODULE LIQUID CRYSTAL (TYPE C) (Note)
⚠ND901	1-518-951-11	TUBE, FLUORESCENT, COLD CATHODE

5. REPAIR PARTS LIST

5-1-5. CABINET R BLOCK



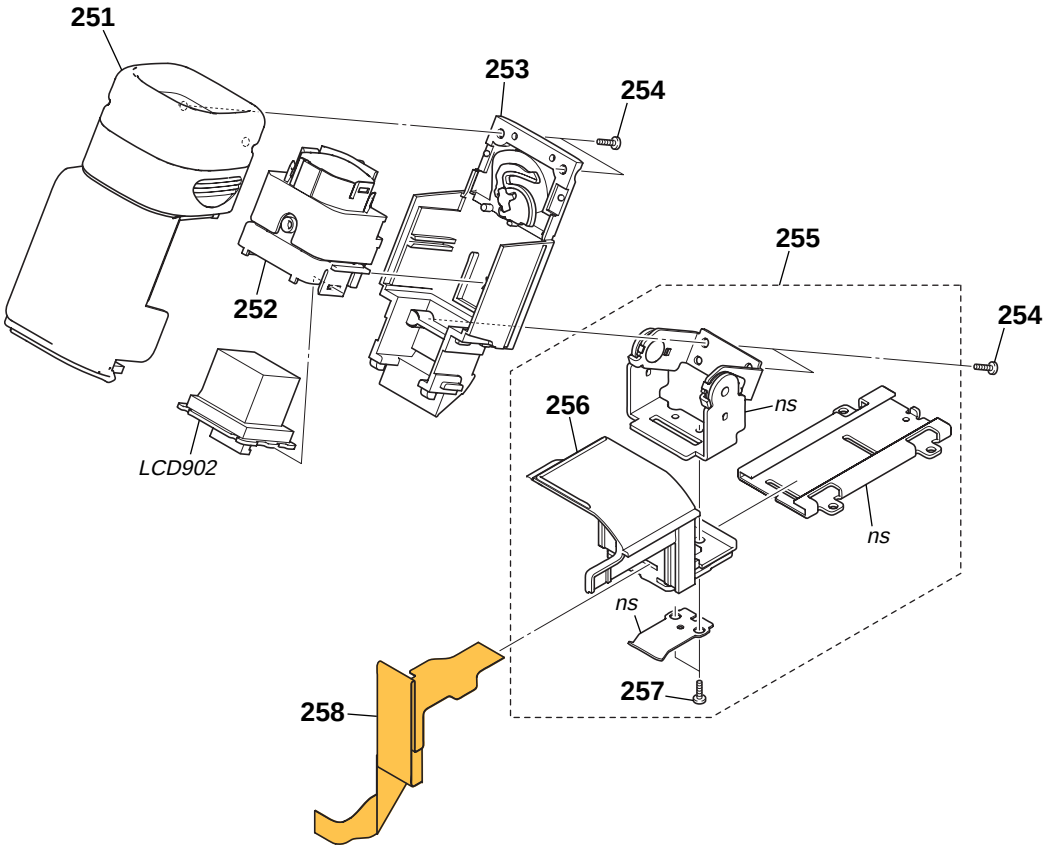
☛ : BT001 (BATTERY, LITHIUM SECONDARY)
Included in the control switch block (CF-5100).

Ref. No.	Part No.	Description
201	1-478-416-11	KEY BLOCK, CONTROL (CF-5100)
202	3-080-206-11	SCREW, TAPPING, P2
203	3-080-205-21	SCREW, TAPPING, P2
204	1-962-648-11	HARNESS (PD-124)
205	3-087-826-01	COVER (M) (51), HINGE
206	3-087-825-01	COVER (C) (51), HINGE
207	3-078-889-11	SCREW (M1.7)
208	1-478-418-11	KEY BLOCK, CONTROL (PR-5100)
209	X-3953-962-1	HINGE (51) ASSY
210	X-3953-963-1	CABINET (R) (515) ASSY

5. REPAIR PARTS LIST

5-1-6. EVF BLOCK

ns: not supplied

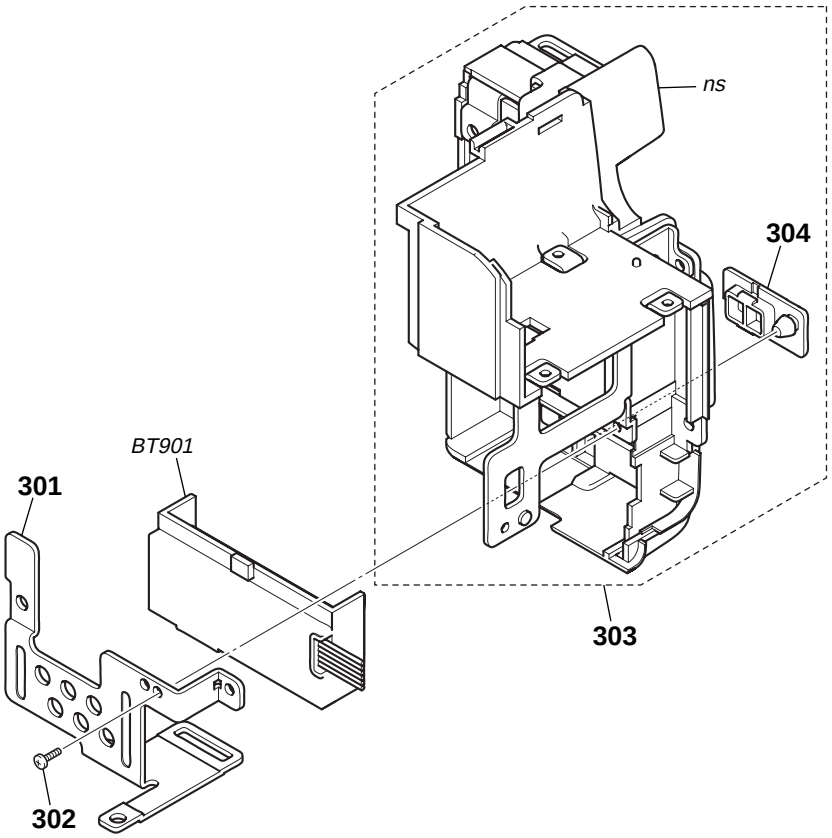


Ref. No.	Part No.	Description
251	X-3953-965-1	CABINET (UPPER) (515) ASSY, EVF
252	X-3951-166-1	LENS (M) ASSY, VF
253	X-3953-966-1	CABINET (LOWER) (515) ASSY, EVF
254	3-080-204-21	SCREW, TAPPING, P2
255	X-3953-967-1	BASE (51) ASSY, SLDE
256	3-087-788-01	BASE (51), SLIDE
257	3-080-203-31	SCREW (M2), LOCK ACE, P2
258	1-860-928-11	FP-797 FLEXIBLE BOARD
LCD902	1-805-465-61	INDICATOR MODULE LIQUID CRYSTAL (TRV128/TRV228/TRV328/TRV428)
LCD902	1-805-465-81	INDICATOR MODULE LIQUID CRYSTAL (TRV228E/TRV428E)

5. REPAIR PARTS LIST

5-1-7. BATTERY PANEL BLOCK

ns: not supplied

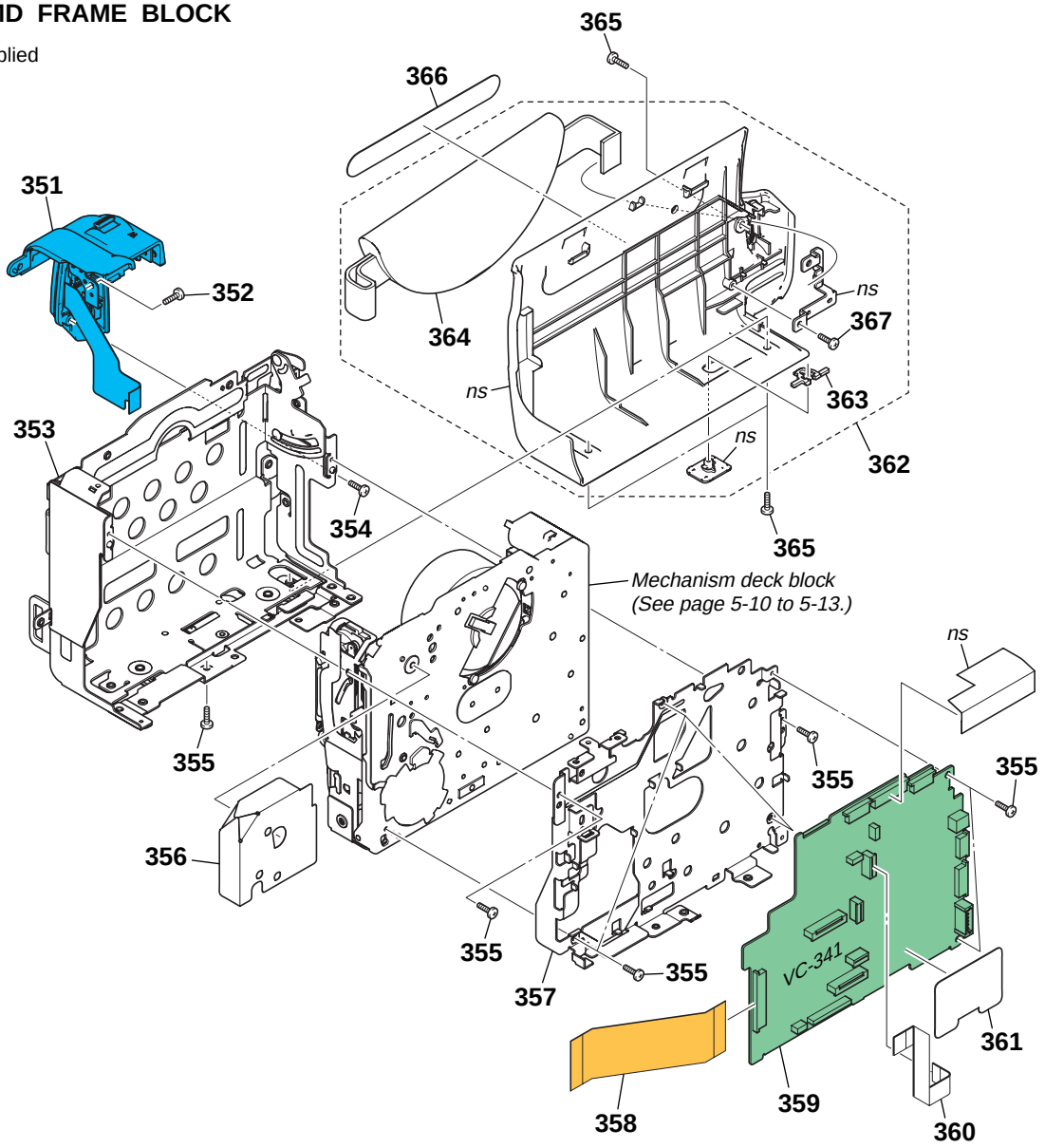


Ref. No.	Part No.	Description
301	3-087-799-01	SHEET METAL (LOWER) (51), STRAP
302	3-078-889-11	SCREW (M1.7)
303	X-3953-968-1	PANEL (515) ASSY, BATTERY
304	3-072-305-01	LID (2500), JACK
BT901	1-694-772-11	TERMINAL BOARD, BATTERY

5. REPAIR PARTS LIST

5-1-8. MD FRAME BLOCK

ns: not supplied



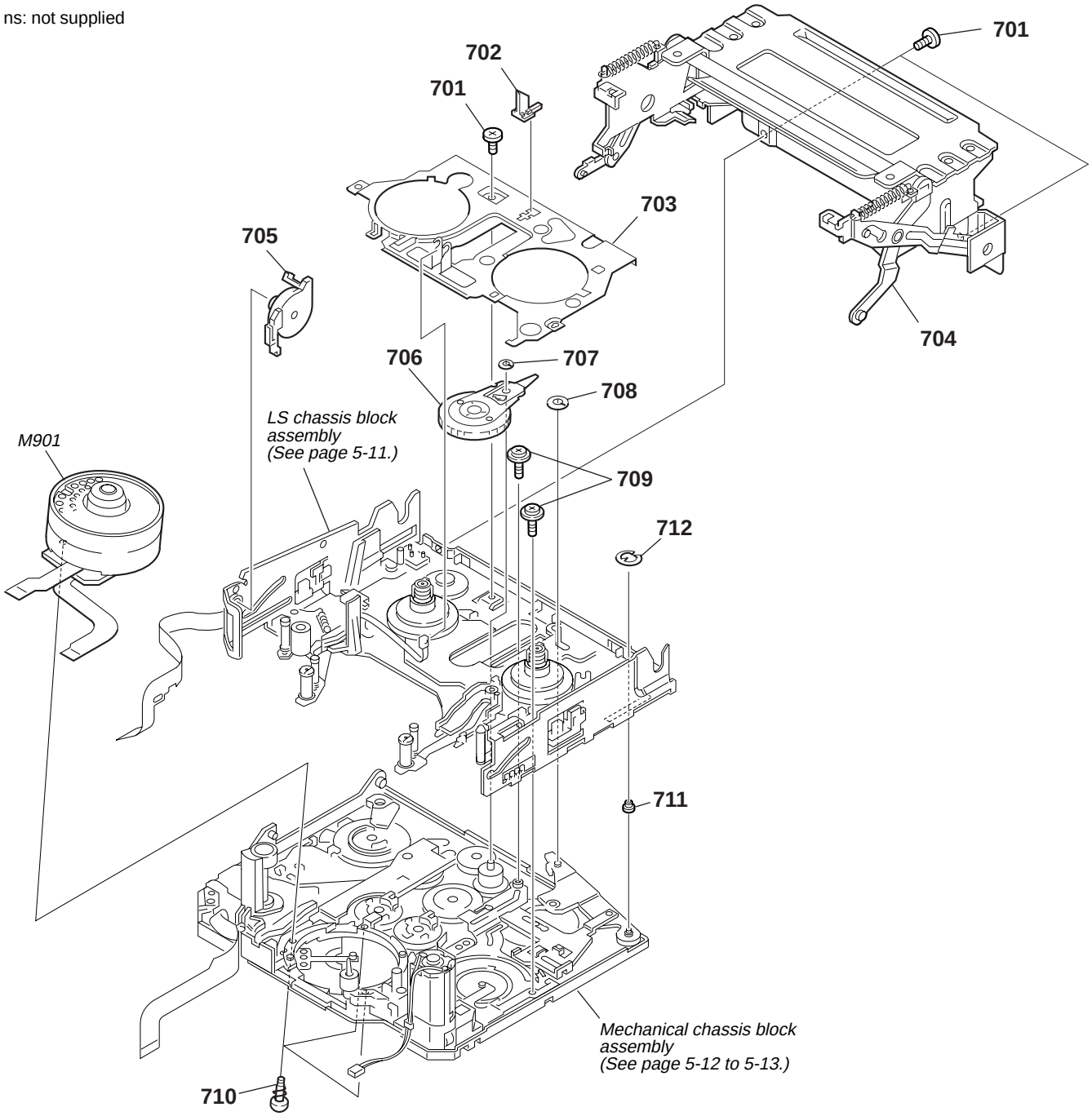
Ref. No.	Part No.	Description
351	1-478-417-11	KEY BLOCK, CONTROL (SS-5100)
352	3-080-253-01	SCREW (M1.7), LOCK ACE, P2
353	X-3953-958-1	FRAME (51) ASSY, CS
354	3-080-204-21	SCREW, TAPPING, P2
355	3-078-889-11	SCREW (M1.7)
356	3-066-169-01	SHEET (30), MD
357	3-087-809-01	FRAME (51), MD
358	1-860-926-12	FP-795 FLEXIBLE BOARD
359	A-7112-396-A	VC-341 BOARD, COMPLETE (SERVICE) (TRV428E)
359	A-7112-394-A	VC-341 BOARD, COMPLETE (SERVICE) (TRV228E)
359	A-7112-393-A	VC-341 BOARD, COMPLETE (SERVICE) (TRV128/TRV228)
359	A-7112-395-A	VC-341 BOARD, COMPLETE (SERVICE) (TRV328/TRV428)

Ref. No.	Part No.	Description
360	1-827-980-11	CABLE, FLEXIBLE FLAT (FFC-005)
361	3-088-391-01	SHEET (51), SHIELD, DD
362	X-3953-957-1	CABINET (L) (51) ASSY
363	3-978-765-01	SLIDER, G LOCK
364	3-087-802-01	BELT (51), GRIP
365	3-080-203-31	SREW (M2), LOCK ACE, P2
366	3-087-832-01	LABEL (L) (51) (TRV128)
366	3-087-832-11	LABEL (L) (51) (TRV228)
366	3-087-832-21	LABEL (L) (51) (TRV228E)
366	3-087-832-31	LABEL (L) (51) (TRV328)
366	3-087-832-51	LABEL (L) (51) (TRV428)
366	3-087-832-61	LABEL (L) (51) (TRV428E)
367	3-080-204-11	SCREW, TAPPING, P2

5. REPAIR PARTS LIST

5-1-9. CASSETTE COMPARTMENT ASSEMBLY, DRUM ASSEMBLY

ns: not supplied



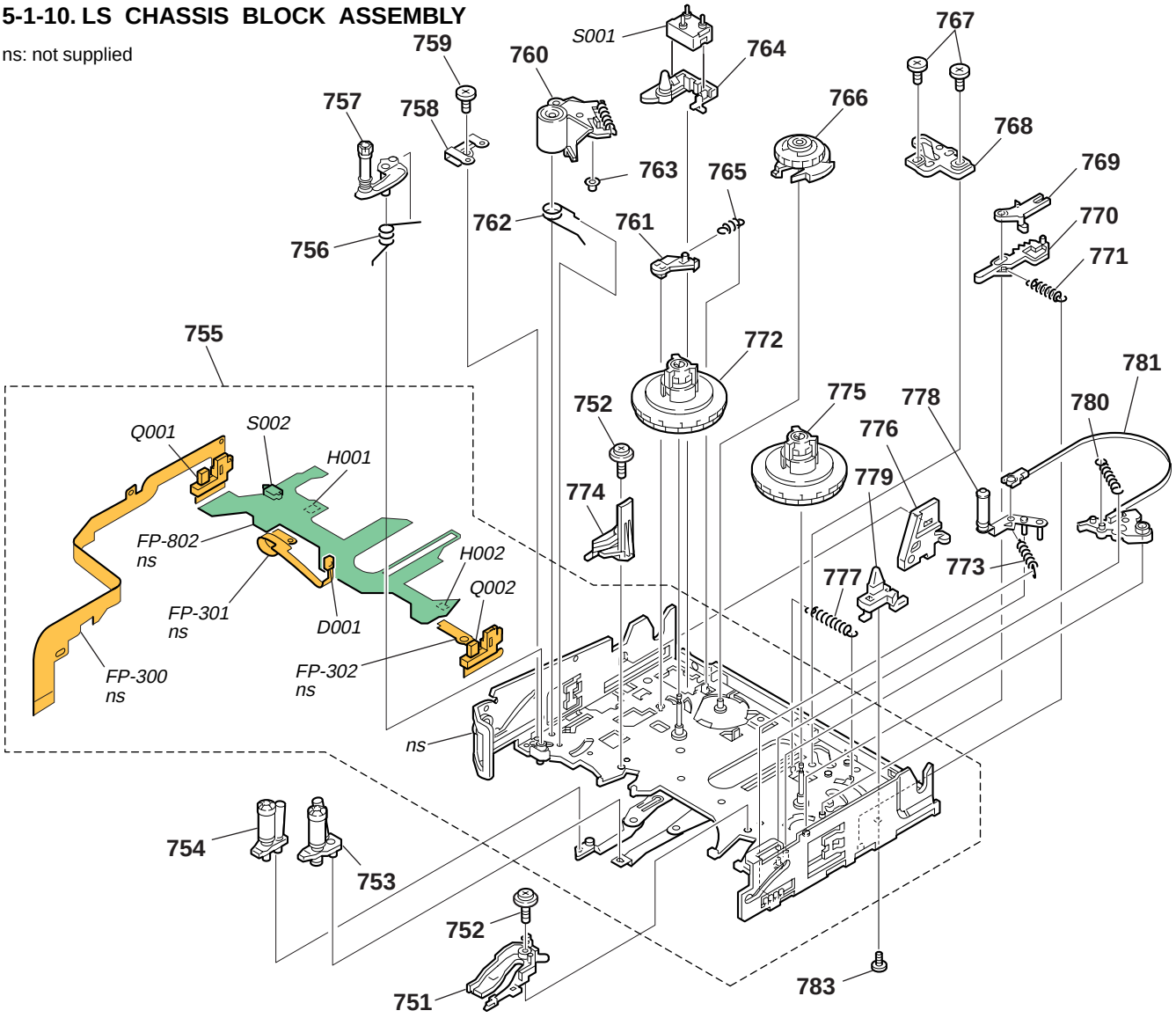
Ref. No.	Part No.	Description
701	3-065-932-01	PAN (2 MAIN M1.4X1.6), CAMERA
702	3-065-895-01	LEVER, REEL RELEASE
703	3-065-896-01	PLATE, BLIND
704	X-3951-298-1	CASSETTE COMPARTMENT ASSY
705	X-3951-302-1	DAMPER ASSY
706	X-3951-297-1	GEAR ASSY, R DRIVE
707	3-065-840-01	CUT (0.98X3X0.13), LUMILER (W)
708	3-065-935-01	HLC CUT 1.8X4X0.5

Ref. No.	Part No.	Description
709	3-947-503-01	SCREW (M1.4)
710	X-3951-299-1	SCREW ASSY, DRUM FITTING
711	3-074-309-01	ROLLER A, LS GUIDE
712	7-624-101-04	STOP RING 1.2 (E TYPE)
M901	A-7048-988-A	DRUM (DGH-0F3B-R) (SERVICE) (MDX-M2100) (TRV128/TRV228/TRV328/TRV428)
M901	A-7048-990-A	DRUM (DGH-0F4B-R) (SERVICE) (MDX-M2101) (TRV228E/TRV428E)

5. REPAIR PARTS LIST

5-1-10. LS CHASSIS BLOCK ASSEMBLY

ns: not supplied



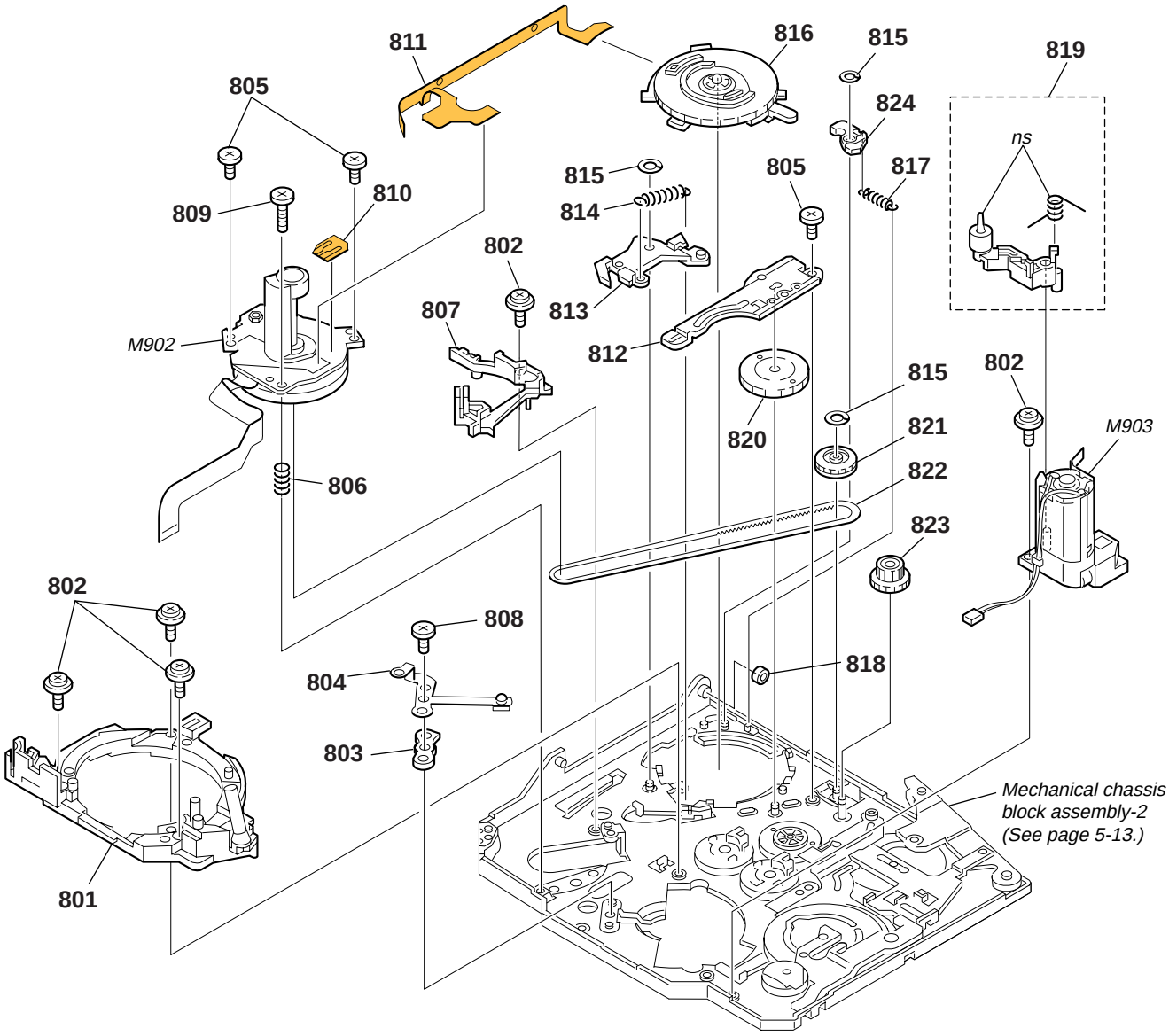
Ref. No.	Part No.	Description
751	3-065-822-02	RAIL (S), GUIDE
752	3-947-503-01	SCREW (M1.4)
753	A-7096-416-B	BASE (S) BLOCK ASSY, GUIDE
754	A-7096-415-A	BASE (T) BLOCK ASSY, GUIDE
755	A-7096-426-A	CHASSIS ASSY, LS
756	3-065-802-01	SPRING, TG7 ARM
757	A-7096-414-A	ARM BLOCK ASSY, TG7
758	3-065-801-01	RETAINER, TG7
759	3-065-932-01	PAN (2 MAIN M1.4X1.6), CAMERA
760	X-3951-303-1	ARM ASSY, PINCH
761	3-065-823-01	ARM, T RATCHET
762	3-065-794-01	ROAD (SPR), PINCH ARM
763	3-065-792-01	ROLLER, P LIM ARM
764	3-065-834-01	GUIDE (T), CASSETTE
765	3-065-824-01	SPRING, T RATCHET
766	A-7096-417-A	SOFT ASSY, T
767	3-071-650-01	SCREW (M1.7) (S)
768	3-065-832-01	PLATE, LS CAM
769	3-065-828-01	ARM, S RATCHET
770	3-065-829-01	PLATE, S RATCHET (RE)

Ref. No.	Part No.	Description
771	3-065-830-01	SPRING, S RATCHET
772	X-3951-288-1	TABLE (T) ASSY, REEL
773	3-065-819-01	SPRING, TG1 ARM
774	3-065-821-01	RAIL (T), GUIDE
775	X-3951-289-1	TABLE (S) ASSY, REEL
776	3-065-833-01	GUIDE, LOCK
777	3-065-831-01	PLATE (SPR), RE RETURN
778	X-3951-304-1	ARM ASSY, TG1
779	3-065-835-01	GUIDE (S), CASSETTE
780	3-065-820-01	SPRING, RVS ARM
781	X-3951-296-1	BAND (ASSY), BT
783	3-067-167-01	SCREW (M1.4X2), CAMERA TAPPING
D001	8-719-988-42	DIODE GL453 (TAPE LED)
H001	8-719-033-37	ELEMENT, HALL HW-105C (T REEL)
H002	8-719-033-37	ELEMENT, HALL HW-105C (S REEL)
Q001	8-729-907-25	PHOTO TRANSISTOR PT4850F (TAPE TOP)
Q002	8-729-907-25	PHOTO TRANSISTOR PT4850F (TAPE END)
S001	1-692-614-11	SWITCH, PUSH (3 KEY) (REC PROOF)
S002	1-572-688-11	SWITCH, PUSH LEVER (1 KEY) (C. C. LOCK)

5. REPAIR PARTS LIST

5-1-11. MECHANICAL CHASSIS BLOCK ASSEMBLY-1

ns: not supplied

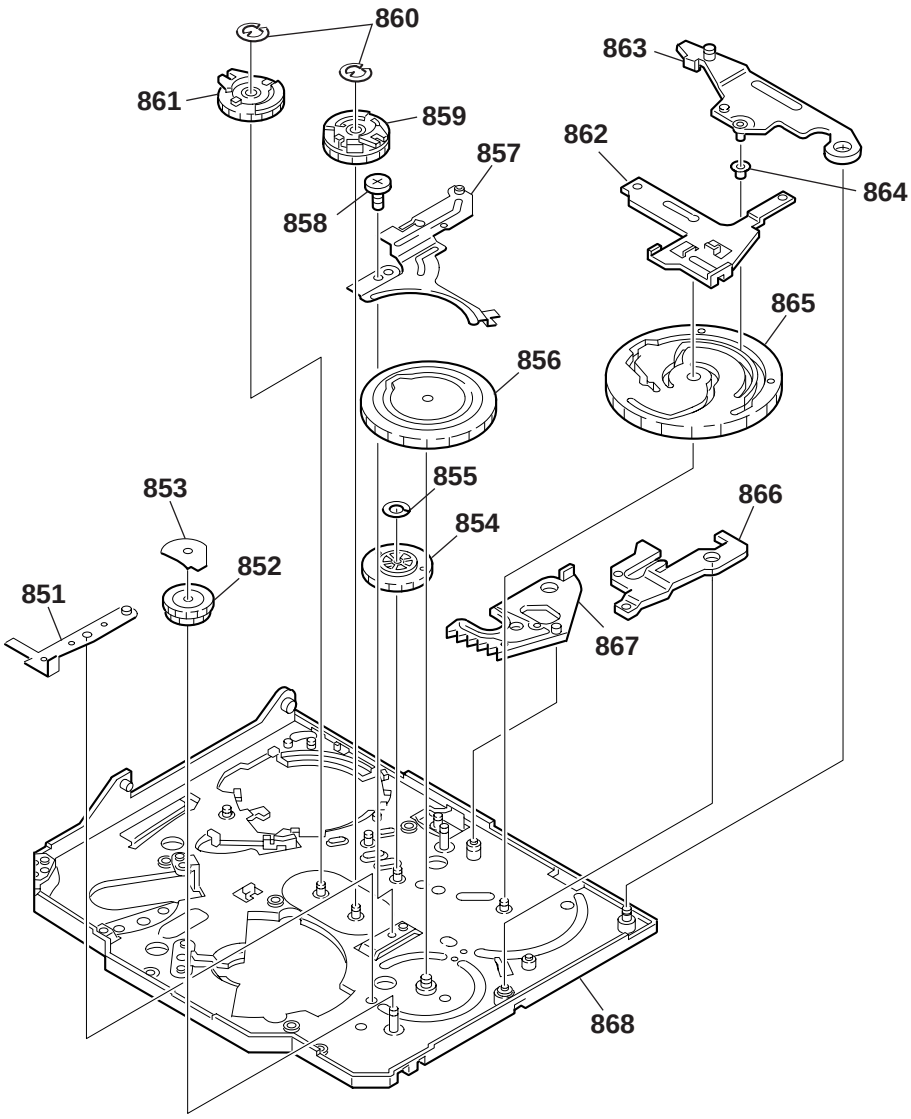


Ref. No.	Part No.	Description
801	A-7096-422-A	BASE ASSY, DRUM
802	3-947-503-01	SCREW (M1.4)
803	3-065-928-01	SPACER, GROUND
804	3-065-927-01	GROUND, DRUM
805	3-065-932-01	PAN (2 MAIN M1.4X1.6), CAMERA
806	3-067-154-01	SPRING, CAPSTAN
807	3-065-931-01	RAIL (T2), GUIDE
808	X-3947-398-1	SCREW ASSY, M1.7 PW
809	3-065-933-01	PAN (2 MAIN 1.4X4.5), CAMERA
810	1-677-049-11	FP-228 FLEXIBLE BOARD
811	1-680-434-11	FP-299 FLEXIBLE BOARD
812	3-065-877-01	PLATE (T), GUIDE LOCK
813	X-3951-301-1	PLATE ASSY, PINCH PRESSURE

Ref. No.	Part No.	Description
814	3-065-881-01	SPRING, P PRESSURE PLATE
815	3-065-934-01	HLW CUT 0.98X3X0.25
816	1-786-096-11	SWITCH, ROTARY
817	3-065-898-01	SPRING, EJECT ARM
818	3-065-870-01	ROLLER, LS GUIDE
819	A-7096-421-A	ARM ASSY, HCL
820	3-065-918-01	GEAR (2), CAM RELAY
821	A-7096-419-A	GEAR ASSY, CHANGE
822	3-065-902-01	BELT, TIMING
823	3-065-905-01	GEAR, RELAY
824	3-065-882-01	ARM, EJECT
M902	8-835-701-01	MOTOR, DC SCE13A/C-NP (CAPSTAN)
M903	A-7096-420-A	MOTOR ASSY, LD (LOADING)

5. REPAIR PARTS LIST

5-1-12. MECHANICAL CHASSIS BLOCK ASSEMBLY-2



Ref. No.	Part No.	Description
851	3-065-920-01	ARM, HC DRIVE
852	3-065-913-01	GEAR (4), LD
853	3-065-914-01	SHEET, COVER
854	3-065-917-01	GEAR (1), CAM RELAY
855	3-065-934-01	HLW CUT 0.98X3X0.25
856	3-065-915-01	GEAR (1), CAM
857	3-065-878-01	PLATE (S), GUIDE LOCK
858	3-065-932-01	PAN (2 MAIN M1.4X1.6), CAMERA
859	A-7096-413-A	GEAR (S) ASSY, GUIDE
860	7-624-101-04	STOP RING 1.2 (E TYPE)
861	A-7096-412-A	GEAR (T) ASSY, GUIDE
862	X-3951-307-1	PLATE ASSY, M SLIDE
863	X-3951-305-1	ARM ASSY, LS
864	3-065-901-01	ROLLER, LS ARM
865	3-065-916-01	GEAR (2), CAM
866	3-065-919-01	ARM, T1 LIMITTER
867	X-3951-308-1	ARM ASSY, GL
868	X-3951-300-2	CHASSIS ASSY, MECHANICAL

5-2. ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description			
	A-7111-944-A	CD-465 BOARD, COMPLETE (TRV228E/TRV428E)			
	A-7111-945-A	CD-465 BOARD, COMPLETE (TRV128/TRV228/TRV328/TRV428)			
		**********			
		(IC951 is not included in this complete board.)			
		< CAPACITOR >			
C951	1-126-395-11	ELECT CHIP	22uF	20%	16V
C953	1-128-994-21	ELECT CHIP	47uF	20%	10V
C955	1-164-360-11	CERAMIC CHIP	0.1uF		16V
		< CONNECTOR >			
CN951	1-779-331-11	FFC/CONNECTOR, FPC (LIF (NON-ZIF)) 14P			
		< IC >			
IC951	A-7013-219-A	CCD BLOCK ASSY (CCD IMAGER) (Note) (TRV128/TRV228/TRV328/TRV428)			
IC951	A-7013-276-A	CCD BLOCK ASSY (CCD IMAGER) (Note) (TRV228E/TRV428E)			
		< COIL >			
L951	1-469-528-91	INDUCTOR	100uH		
		< TRANSISTOR >			
Q951	8-729-117-73	TRANSISTOR	2SC4178-F14		
		< RESISTOR >			
R952	1-208-635-11	METAL CHIP	10	0.5%	1/16W
R953	1-218-965-11	RES-CHIP	10K	5%	1/16W
		FP-300 FLEXIBLE BOARD (Not Supplied)			
		**********			
		< PHOTO TRANSISTOR >			
Q001	8-729-907-25	PHOTO TRANSISTOR PT4850F (TAPE TOP)			
		FP-301 FLEXIBLE BOARD (Not Supplied)			
		**********			
		< DIODE >			
D001	8-719-988-42	DIODE GL453S (TAPE LED)			
		FP-302 FLEXIBLE BOARD (Not Supplied)			
		**********			
		< PHOTO TRANSISTOR >			
Q002	8-729-907-25	PHOTO TRANSISTOR PT4850F (TAPE END)			

Ref. No.	Part No.	Description			
	1-860-929-11	FP-792 FLEXIBLE BOARD			
		**********			
		(D001, D002 and D003 are not included in this flexible board.)			
		< DIODE >			
D001	6-500-744-01	DIODE NSPW500BS-TL2 (VIDEO LIGHT)			
D002	6-500-744-01	DIODE NSPW500BS-TL2 (VIDEO LIGHT)			
D003	6-500-744-01	DIODE NSPW500BS-TL2 (VIDEO LIGHT)			
		FP-802 FLEXIBLE BOARD (Not Supplied)			
		**********			
		< HOLE ELEMENT >			
H001	8-719-033-37	ELEMENT, HALL HW-105C (T REEL)			
H002	8-719-033-37	ELEMENT, HALL HW-105C (S REEL)			
		< SWITCH >			
S001	1-692-614-11	SWITCH, PUSH (3 KEY) (REC PROOF)			
S002	1-572-688-11	SWITCH, PUSH LEVER (1 KEY) (C.C. LOCK)			
	A-7111-949-A	PD-204 BOARD, COMPLETE (TYPE C)			
		**********			
		< CAPACITOR >			
C6001	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6002	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C6003	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C6004	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C6005	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C6006	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C6007	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C6009	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6010	1-164-739-11	CERAMIC CHIP	560PF	5%	50V
C6011	1-163-023-00	CERAMIC CHIP	0.015uF	10%	50V
C6012	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6013	1-100-371-11	CERAMIC CHIP	12PF	5%	3.15KV
C6015	1-127-573-11	CERAMIC CHIP	1uF	10%	16V
C6019	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C6020	1-110-457-11	ELECT CHIP	3.3uF	20%	25V
C6022	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6024	1-127-573-11	CERAMIC CHIP	1uF	10%	16V
C6026	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C6027	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6028	1-115-407-11	ELECT CHIP	10uF		16V
		< CONNECTOR >			
CN6001	1-794-997-11	PIN, CONNECTOR 20P			
CN6003	1-764-709-11	FFC/CONNECTOR, FPC (LIF) 10P			
CN6004	1-815-031-11	CONNECTOR, FFC/FPC (ZIF) 24P			
CN6005	1-816-176-11	CONNECTOR, FFC/FPC (ZIF) 6P			
		< DIODE >			
D6004	8-719-073-01	DIODE MA111-(K8).S0			
D6009	8-719-071-34	DIODE RB521S-30-TE61			

Note: Be sure to read “Precautions for Replacement of CCD Imager” on page 4-8 when changing the CCD imager.

Ref. No.	Part No.	Description			
		< FERRITE BEAD >			
FB6001	1-414-760-21	FERRITE, EMI (SMD) (1608)			
		< IC >			
IC6001	6-705-329-01	IC CM7104L42-T4			
		< COIL >			
L6001	1-469-527-91	INDUCTOR	47uH		
L6002	1-412-056-11	INDUCTOR	4.7uH		
L6003	1-428-878-11	INDUCTOR	82uH		
L6004	1-469-526-91	INDUCTOR	22uH		
		< TRANSISTOR >			
Q6002	6-550-065-01	TRANSISTOR	CPH5504-TL-E		
		< RESISTOR >			
R6005	1-216-824-11	METAL CHIP	1.8K	5%	1/10W
R6009	1-218-975-11	RES-CHIP	68K	5%	1/16W
R6010	1-218-969-11	RES-CHIP	22K	5%	1/16W
R6012	1-208-707-11	METAL CHIP	10K	0.5%	1/16W
R6013	1-208-935-11	METAL CHIP	100K	0.5%	1/16W
R6014	1-218-949-11	RES-CHIP	470	5%	1/16W
R6019	1-218-990-11	SHORT CHIP	0		
R6020	1-218-990-11	SHORT CHIP	0		
R6026	1-218-990-11	SHORT CHIP	0		
R6030	1-218-962-11	RES-CHIP	5.6K	5%	1/16W
R6031	1-218-990-11	SHORT CHIP	0		
R6032	1-218-978-11	RES-CHIP	120K	5%	1/16W
		< COMPOSITION CIRCUIT BLOCK >			
RB6003	1-234-372-21	RES, NETWORK 100 x 4 (1005)			
		< TRANSFORMER >			
⚠T6001	1-435-786-31	TRANSFORMER, INVERTER			
	A-7111-948-A	PD-204 BOARD, COMPLETE (TYPE S)			
		**********			
		< CAPACITOR >			
C6001	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6002	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C6003	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C6004	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C6005	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C6006	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C6007	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C6009	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6010	1-164-739-11	CERAMIC CHIP	560PF	5%	50V
C6011	1-163-023-00	CERAMIC CHIP	0.015uF	10%	50V
C6012	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6013	1-100-371-11	CERAMIC CHIP	12PF	5%	3.15KV
C6015	1-127-573-11	CERAMIC CHIP	1uF	10%	16V
C6016	1-100-249-11	CERAMIC CHIP	0.01uF	10%	16V
C6019	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C6020	1-110-457-11	ELECT CHIP	3.3uF	20%	25V
C6022	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6024	1-127-573-11	CERAMIC CHIP	1uF	10%	16V
C6026	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C6027	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6028	1-115-407-11	ELECT CHIP	10uF		16V
C6029	1-125-827-91	CERAMIC CHIP	1uF	10%	25V
		< CONNECTOR >			
CN6001	1-794-997-11	PIN, CONNECTOR 20P			
CN6003	1-764-709-11	CONNECTOR, FFC/FPC (LIF) 10P			
CN6004	1-815-031-11	FFC/CONNECTOR, FPC (ZIF) 24P			
CN6005	1-816-176-11	CONNECTOR, FFC/FPC (ZIF) 6P			
		< DIODE >			
D6004	8-719-988-61	DIODE 1SS355TE-17			
D6006	8-719-988-61	DIODE 1SS355TE-17			
D6009	8-719-071-34	DIODE RB521S-30-TE61			
		< FERRITE BEAD >			
FB6001	1-414-760-21	FERRITE, EMI (SMD)(1608)			
		< IC >			
IC6001	6-705-330-01	IC LRS57231			
		< COIL >			
L6001	1-469-527-91	INDUCTOR	47uH		
L6002	1-412-056-11	INDUCTOR	4.7uH		
L6003	1-428-878-11	INDUCTOR	82uH		
L6004	1-469-526-91	INDUCTOR	22uH		
		< TRANSISTOR >			
Q6002	6-550-065-01	TRANSISTOR	CPH5504-TL-E		
Q6004	8-729-054-48	TRANSISTOR	UP04601008S0		
Q6005	8-729-054-48	TRANSISTOR	UP04601008S0		
Q6008	6-550-242-01	TRANSISTOR	DTC114EMT2L		
Q6009	6-550-232-01	TRANSISTOR	2SA2029T2LQ/R		
		< RESISTOR >			
R6005	1-216-824-11	METAL CHIP	1.8K	5%	1/10W
R6009	1-218-975-11	RES-CHIP	68K	5%	1/16W
R6010	1-218-969-11	RES-CHIP	22K	5%	1/16W
R6012	1-208-707-11	METAL CHIP	10K	0.5%	1/16W
R6013	1-208-935-11	METAL CHIP	100K	0.5%	1/16W
R6014	1-218-949-11	RES-CHIP	470	5%	1/16W
R6030	1-218-962-11	RES-CHIP	5.6K	5%	1/16W
R6039	1-218-960-11	RES-CHIP	3.9K	5%	1/16W
R6040	1-218-973-11	RES-CHIP	47K	5%	1/16W
R6041	1-218-953-11	RES-CHIP	1K	5%	1/16W
		< COMPOSITION CIRCUIT BLOCK >			
RB6001	1-234-378-21	RES, NETWORK 10K x 4 (1005)			
RB6002	1-234-384-11	RES, NETWORK 1M x 4 (1005)			
RB6003	1-234-372-21	RES, NETWORK 100 x 4 (1005)			
		< TRANSFORMER >			
⚠T6001	1-435-786-31	TRANSFORMER, INVERTER			

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

SI-039 VC-341

Ref. No.	Part No.	Description
	A-7111-950-A	SI-039 BOARD, COMPLETE (TRV128/TRV228/TRV228E)
	A-7111-951-A	SI-039 BOARD, COMPLETE (TRV328/TRV428/TRV428E)
		**********
		(D753, D754, IC751, J751, J752 and J753 are not included in this complete board.)
		< CAPACITOR >
C758	1-127-760-11	CERAMIC CHIP 4.7uF 10% 6.3V (TRV328/TRV428/TRV428E)
C759	1-127-760-11	CERAMIC CHIP 4.7uF 10% 6.3V (TRV328/TRV428/TRV428E)
		< CONNECTOR >
CN755	1-750-361-21	CONNECTOR, FFC/FPC (ZIF) 30P
		< DIODE >
D751	6-500-044-01	DIODE DF6A6.8FU (TE85R)
D752	6-500-044-01	DIODE DF6A6.8FU (TE85R)
D753	8-719-060-65	DIODE DCC3810 (IR EMITTER)
D754	8-719-060-65	DIODE DCC3810 (IR EMITTER)
D755	6-500-044-01	DIODE DF6A6.8FU (TE85R)
D759	6-500-506-01	DIODE TLRMV1021 (T15SOY, F) (TALLY)
		< FERRITE BEAD >
FB751	1-414-760-21	INDUCTOR, FERRITE BEAD (TRV328/TRV428/TRV428E)
		< IC >
IC751	6-704-975-01	IC RPM7240-V4 (TRV228/TRV228E/TRV428/TRV428E)
		< JACK >
J751	1-778-518-11	CONNECTOR, EXTERNAL (S VIDEO OUT)
J752	1-778-040-11	JACK, SMALL TYPE (A/V OUT)
J753	1-817-944-11	JACK, SMALL TYPE (RFU DC OUT)
		< TRANSISTOR >
Q751	8-729-023-22	TRANSISTOR 2SD2114K
		< RESISTOR >
R752	1-216-806-11	METAL CHIP 56 5% 1/10W
R753	1-216-806-11	METAL CHIP 56 5% 1/10W
R761	1-216-864-11	SHORT CHIP 0
R763	1-216-821-11	METAL CHIP 1K 5% 1/10W
		< SENSOR >
SE751	1-476-807-41	SENSOR, ANGULAR VELOCITY (YAW) (TRV328/TRV428/TRV428E)
SE752	1-476-807-31	SENSOR, ANGULAR VELOCITY (PITCH) (TRV328/TRV428/TRV428E)

Ref. No.	Part No.	Description
	A-7112-393-A	VC-341 BOARD, COMPLETE (SERVICE) (TRV128/TRV228)
	A-7112-394-A	VC-341 BOARD, COMPLETE (SERVICE) (TRV228E)
	A-7112-395-A	VC-341 BOARD, COMPLETE (SERVICE) (TRV328/TRV428)
	A-7112-396-A	VC-341 BOARD, COMPLETE (SERVICE) (TRV428E)
		**********
		< CAPACITOR >
C002	1-125-777-11	CERAMIC CHIP 0.1uF 10% 10V
C003	1-127-760-11	CERAMIC CHIP 4.7uF 10% 6.3V
C053	1-125-777-11	CERAMIC CHIP 0.1uF 10% 10V
C054	1-125-777-11	CERAMIC CHIP 0.1uF 10% 10V
C055	1-107-819-11	CERAMIC CHIP 0.022uF 10% 16V
C056	1-164-941-11	CERAMIC CHIP 0.0047uF 10% 16V
C057	1-164-942-11	CERAMIC CHIP 0.0068uF 10% 16V
C058	1-119-923-11	CERAMIC CHIP 0.047uF 10% 10V
C059	1-119-923-11	CERAMIC CHIP 0.047uF 10% 10V
C060	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V
C062	1-164-939-11	CERAMIC CHIP 0.0022uF 10% 50V
C063	1-125-777-11	CERAMIC CHIP 0.1uF 10% 10V
C064	1-164-937-11	CERAMIC CHIP 0.001uF 10% 50V
C065	1-125-777-11	CERAMIC CHIP 0.1uF 10% 10V
C066	1-125-837-91	CERAMIC CHIP 1uF 10% 6.3V
C067	1-127-988-81	CERAMIC CHIP 15000PF 10% 16V
C068	1-125-777-11	CERAMIC CHIP 0.1uF 10% 10V
C069	1-165-908-11	CERAMIC CHIP 1uF 10% 10V
C070	1-107-819-11	CERAMIC CHIP 0.022uF 10% 16V
C071	1-115-566-11	CERAMIC CHIP 4.7uF 10% 10V
C072	1-127-772-81	CERAMIC CHIP 33000PF 10% 10V
C073	1-165-875-11	CERAMIC CHIP 10uF 10% 10V
C075	1-127-760-11	CERAMIC CHIP 4.7uF 10% 6.3V
C076	1-115-566-11	CERAMIC CHIP 4.7uF 10% 10V
C078	1-115-566-11	CERAMIC CHIP 4.7uF 10% 10V
C079	1-115-566-11	CERAMIC CHIP 4.7uF 10% 10V
C080	1-115-566-11	CERAMIC CHIP 4.7uF 10% 10V
C081	1-125-838-11	CERAMIC CHIP 2.2uF 10% 6.3V
C082	1-127-573-11	CERAMIC CHIP 1uF 10% 16V
C083	1-125-827-91	CERAMIC CHIP 1uF 10% 25V
C084	1-125-827-91	CERAMIC CHIP 1uF 10% 25V
C085	1-127-760-11	CERAMIC CHIP 4.7uF 10% 6.3V
C086	1-115-566-11	CERAMIC CHIP 4.7uF 10% 10V
C087	1-127-760-11	CERAMIC CHIP 4.7uF 10% 6.3V
C088	1-127-760-11	CERAMIC CHIP 4.7uF 10% 6.3V
C089	1-115-566-11	CERAMIC CHIP 4.7uF 10% 10V
C090	1-115-566-11	CERAMIC CHIP 4.7uF 10% 10V
C091	1-125-777-11	CERAMIC CHIP 0.1uF 10% 10V
C094	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V
C095	1-115-566-11	CERAMIC CHIP 4.7uF 10% 10V
C096	1-119-749-11	TANTAL. CHIP 33uF 20% 4V
C097	1-119-750-11	TANTAL. CHIP 22uF 20% 6.3V
C098	1-115-566-11	CERAMIC CHIP 4.7uF 10% 10V
C099	1-125-838-11	CERAMIC CHIP 2.2uF 10% 6.3V
C100	1-125-837-91	CERAMIC CHIP 1uF 10% 6.3V
C102	1-127-760-11	CERAMIC CHIP 4.7uF 10% 6.3V
C103	1-127-760-11	CERAMIC CHIP 4.7uF 10% 6.3V
C104	1-119-750-11	TANTAL. CHIP 22uF 20% 6.3V

Ref. No.	Part No.	Description			
C105	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C106	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C107	1-164-506-11	CERAMIC CHIP	4.7uF		16V
C108	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C109	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C152	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C156	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C157	1-127-861-11	CERAMIC CHIP	2.2uF	10%	16V
C158	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C160	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C161	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C163	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C164	1-164-848-11	CERAMIC CHIP	8PF	0.5PF	50V
C165	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C166	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C167	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C168	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C169	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C170	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C171	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C172	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C173	1-164-935-11	CERAMIC CHIP	470PF	10%	50V
C176	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C177	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C179	1-100-696-91	CERAMIC CHIP	1uF	10%	6.3V
C202	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C203	1-164-941-11	CERAMIC CHIP	0.0047uF	10%	16V
C204	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C205	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C206	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C207	1-164-935-11	CERAMIC CHIP	470PF	10%	50V
C208	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C209	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C210	1-165-708-11	ELECT	47uF	20%	6.3V
C211	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C212	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V
C214	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C215	1-164-939-11	CERAMIC CHIP	0.0022uF	10%	50V
C217	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C218	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C251	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C252	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C276	1-110-666-11	ELECT CHIP	22uF	20%	6.3V
			(TRV328/TRV428/TRV428E)		
C278	1-110-666-11	ELECT CHIP	22uF	20%	6.3V
			(TRV328/TRV428/TRV428E)		
C280	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
			(TRV328/TRV428/TRV428E)		
C281	1-100-252-11	CERAMIC CHIP	0.1uF	10%	6.3V
			(TRV328/TRV428/TRV428E)		
C282	1-100-251-11	CERAMIC CHIP	0.047uF	10%	10V
			(TRV328/TRV428/TRV428E)		
C283	1-100-251-11	CERAMIC CHIP	0.047uF	10%	10V
			(TRV328/TRV428/TRV428E)		
C301	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C302	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C303	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C304	1-164-392-11	CERAMIC CHIP	390PF	5%	50V

Ref. No.	Part No.	Description			
C306	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C307	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C309	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C310	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C320	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C322	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C323	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C324	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V
C325	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C326	1-164-938-11	CERAMIC CHIP	0.0015uF	10%	50V
C328	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C329	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C332	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C333	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C334	1-100-252-11	CERAMIC CHIP	0.1uF	10%	6.3V
C335	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C339	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C401	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C404	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C406	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C407	1-100-246-11	CERAMIC CHIP	0.001uF	10%	50V
C408	1-100-249-11	CERAMIC CHIP	0.01uF	10%	16V
C409	1-100-251-11	CERAMIC CHIP	0.047uF	10%	10V
C410	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C411	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C412	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C413	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C415	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C417	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C420	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C423	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C424	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C425	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C426	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C427	1-164-941-11	CERAMIC CHIP	0.0047uF	10%	16V
					(TRV228E/TRV428E)
C428	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
					(TRV228E/TRV428E)
C429	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C430	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C431	1-119-923-11	CERAMIC CHIP	0.047uF	10%	10V
C432	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C433	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C434	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C435	1-125-838-11	CERAMIC CHIP	2.2uF	10%	6.3V
C436	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C437	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C439	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C441	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C442	1-164-935-11	CERAMIC CHIP	470PF	10%	50V
C443	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C444	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C445	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C481	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C482	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V
C483	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C484	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C486	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V

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Ref. No.	Part No.	Description			
C487	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C488	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C489	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C490	1-164-874-11	CERAMIC CHIP	100PF	5%	50V
C491	1-164-878-11	CERAMIC CHIP	150PF	5%	50V
C492	1-164-872-11	CERAMIC CHIP	82PF	5%	50V
C493	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C494	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C495	1-164-874-11	CERAMIC CHIP	100PF	5%	50V
C496	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C497	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C498	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C500	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C505	1-100-249-11	CERAMIC CHIP	0.01uF	10%	16V
C507	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C508	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C509	1-164-941-11	CERAMIC CHIP	0.0047uF	10%	16V
C513	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V
C514	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C515	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C601	1-100-249-11	CERAMIC CHIP	0.01uF	10%	16V
C602	1-164-850-11	CERAMIC CHIP	10PF	0.5PF	50V
C603	1-164-850-11	CERAMIC CHIP	10PF	0.5PF	50V
C604	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C605	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C606	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C607	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C609	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C610	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C611	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C614	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C615	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C616	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C617	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
			(TRV328/TRV428/TRV428E)		
C617	1-218-977-11	RES-CHIP	100K	5%	1/16W
			(Note) (TRV128/TRV228/TRV228E)		
C618	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
			(TRV328/TRV428/TRV428E)		
C618	1-218-977-11	RES-CHIP	100K	5%	1/16W
			(Note) (TRV128/TRV228/TRV228E)		
C619	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C620	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C622	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C623	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C624	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C708	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C709	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C710	1-164-941-11	CERAMIC CHIP	0.0047uF	10%	16V
C711	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C712	1-164-856-81	CERAMIC CHIP	18PF	5%	50V
C713	1-100-249-11	CERAMIC CHIP	0.01uF	10%	16V
C714	1-164-856-81	CERAMIC CHIP	18PF	5%	50V
C715	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C801	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C802	1-124-779-00	ELECT CHIP	10uF	20%	16V
C805	1-124-779-00	ELECT CHIP	10uF	20%	16V
C806	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V

Ref. No.	Part No.	Description			
C807	1-124-779-00	ELECT CHIP	10uF	20%	16V
C808	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C810	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C811	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C812	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C814	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C815	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C816	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C817	1-124-779-00	ELECT CHIP	10uF	20%	16V
C818	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V
C819	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C820	1-126-602-11	ELECT CHIP	3.3uF	20%	50V
C821	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V
C822	1-127-715-91	CERAMIC CHIP	0.22uF	10%	16V
C823	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C825	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C826	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C828	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C829	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C830	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C831	1-164-941-11	CERAMIC CHIP	0.0047uF	10%	16V
C832	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C833	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C834	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C835	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C836	1-127-715-91	CERAMIC CHIP	0.22uF	10%	16V
C837	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C839	1-125-891-11	CERAMIC CHIP	0.47uF	10%	10V
C840	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C841	1-124-779-00	ELECT CHIP	10uF	20%	16V
C842	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C843	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C844	1-164-870-11	CERAMIC CHIP	68PF	5%	50V
C845	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C846	1-126-209-11	ELECT CHIP	100uF	20%	4V
C847	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C848	1-126-209-11	ELECT CHIP	100uF	20%	4V
C849	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C850	1-100-696-91	CERAMIC CHIP	1uF	10%	6.3V
		< CONNECTOR >			
CN002	1-794-998-31	PIN, CONNECTOR 20P			
CN004	1-779-328-21	CONNECTOR, FFC/FPC 8P			
CN005	1-779-335-21	CONNECTOR, FFC/FPC 22P			
CN006	1-766-677-21	CONNECTOR, FFC/FPC 16P			
CN007	1-766-677-21	CONNECTOR, FFC/FPC 16P			
CN008	1-794-057-21	PIN, CONNECTOR (PC BOARD) 2P			
CN009	1-818-072-11	CONNECTOR, FFC/FPC (ZIF) 30P			
CN053	1-573-806-21	PIN, CONNECTOR (1.5MM)(SMD) 6P			
CN151	1-779-331-11	FFC/CONNECTOR, FPC (LIF (NON-ZIF)) 14P			
CN201	1-750-360-21	CONNECTOR, FFC/FPC (ZIF) 24P			
* CN401	1-580-055-21	PIN, CONNECTOR (SMD) 2P			
CN402	1-766-646-21	CONNECTOR, FFC/FPC 10P			
CN403	1-816-179-11	FFC/CONNECTOR, FPC (ZIF) 22P			
CN404	1-766-345-21	CONNECTOR, FFC/FPC 15P			
CN481	1-766-647-21	CONNECTOR, FFC/FPC 11P			

Note: Resistors are mounted to the location where C617, C618 are printed. (TRV128/TRV228/TRV228E only)

Ref. No.	Part No.	Description
		< DIODE >
D001	6-500-314-01	DIODE DAN222MT2L
D006	6-500-044-01	DIODE DF6A6.8FU (TE85R)
D007	6-500-044-01	DIODE DF6A6.8FU (TE85R)
D008	8-719-978-33	DIODE DTZ-TT11-6.8B
D009	6-500-776-01	DIODE MAZW068H0LS0
D051	6-500-776-01	DIODE MAZW068H0LS0
D052	8-719-074-08	DIODE MA4ZD03001S0
D053	8-719-027-76	DIODE 1SS357-TPH3
D054	6-500-314-01	DIODE DAN222MT2L
D055	8-719-074-08	DIODE MA4ZD03001S0
D151	8-719-082-63	DIODE 1SV329 (TPL3)
D202	8-719-988-61	DIODE 1SS355TE-17
D301	6-500-818-01	DIODE KV1870RTL-G
D302	6-500-818-01	DIODE KV1870RTL-G
D701	8-719-988-61	DIODE 1SS355TE-17
		< FUSE >
⚠F001	1-576-406-21	FUSE (1.4A/32V)
⚠F002	1-576-406-21	FUSE (1.4A/32V)
⚠F003	1-576-406-21	FUSE (1.4A/32V)
⚠F004	1-576-406-21	FUSE (1.4A/32V)
		< FERRITE BEAD >
FB051	1-414-760-21	FERRITE, EMI (SMD) (1608)
FB151	1-414-760-21	FERRITE, EMI (SMD) (1608)
FB152	1-414-760-21	FERRITE, EMI (SMD) (1608)
FB251	1-414-760-21	FERRITE, EMI (SMD) (1608)
FB252	1-414-760-21	FERRITE, EMI (SMD) (1608)
FB401	1-414-760-21	FERRITE, EMI (SMD) (1608)
FB481	1-414-228-11	INDUCTOR, FERRITE BEAD
FB482	1-414-228-11	INDUCTOR, FERRITE BEAD
FB601	1-414-760-21	FERRITE, EMI (SMD) (1608)
		< IC >
IC001	6-702-302-01	IC TK11133CSCL-G
IC051	6-705-264-01	IC MB44A120BPFV-G-BND-ERE1
IC151	8-752-417-70	IC CXD2444AR-T4
IC152	8-759-699-92	IC AD80013AJSTRL
IC201	8-759-637-96	IC uPD16877MA-6A5-E2
IC202	8-759-681-42	IC NJM12902V (TE2)
IC251	8-759-713-19	IC BH2222FV-E2
IC271	8-759-489-19	IC uPC6756GR-8JG-E2 (TRV328/TRV428/TRV428E)
IC301	8-759-677-85	IC MB87M1011PFF-G-BND
IC302	6-705-530-01	IC BU3097-03FV-E2
IC401	6-705-676-01	IC TB6550FG (O, EB)
IC481	8-752-093-69	IC CXA3265R-T4
IC601	6-803-730-01	IC MB91194APFF-G-153-BNDE1
IC602	6-705-122-01	IC BR25C320FV-WE2
IC701	6-803-798-01	IC MB89097PFV-G-170-BND-ERE1
IC801	6-704-790-01	IC AN12985A-VB
		< COIL >
L051	1-416-670-11	INDUCTOR 33uH
L052	1-416-669-11	INDUCTOR 22uH
L053	1-416-669-11	INDUCTOR 22uH
L054	1-416-670-11	INDUCTOR 33uH
L055	1-416-669-11	INDUCTOR 22uH
L056	1-416-669-11	INDUCTOR 22uH
L057	1-416-670-11	INDUCTOR 33uH
L058	1-469-524-91	INDUCTOR 4.7uH
L059	1-412-056-11	INDUCTOR 4.7uH
L060	1-469-524-91	INDUCTOR 4.7uH
L061	1-469-524-91	INDUCTOR 4.7uH
L062	1-469-524-91	INDUCTOR 4.7uH
L063	1-469-526-91	INDUCTOR 22uH
L064	1-469-524-91	INDUCTOR 4.7uH
L065	1-469-526-91	INDUCTOR 22uH
L066	1-410-389-31	INDUCTOR 47uH
L151	1-400-588-11	INDUCTOR, LAMINATE CHIP 10uH
L201	1-414-398-11	INDUCTOR 10uH
L202	1-400-588-11	INDUCTOR, LAMINATE CHIP 10uH
L271	1-400-588-11	INDUCTOR, LAMINATE CHIP 10uH (TRV328/TRV428/TRV428E)
L301	1-400-588-11	INDUCTOR, LAMINATE CHIP 10uH
L302	1-400-588-11	INDUCTOR, LAMINATE CHIP 10uH
L303	1-400-588-11	INDUCTOR, LAMINATE CHIP 10uH
L304	1-400-588-11	INDUCTOR, LAMINATE CHIP 10uH
L308	1-412-985-31	INDUCTOR 3.3uH
L481	1-414-406-41	INDUCTOR 220uH
L482	1-400-197-11	INDUCTOR 12uH
L483	1-469-526-91	INDUCTOR 22uH
L484	1-414-406-41	INDUCTOR 220uH
L801	1-400-588-11	INDUCTOR, LAMINATE CHIP 10uH
		< TRANSISTOR >
Q001	8-729-402-84	TRANSISTOR XN4601
Q002	6-550-242-01	TRANSISTOR DTC114EMT2L
Q051	6-550-237-01	TRANSISTOR 2SC5658T2LQ/R
Q052	6-550-404-01	TRANSISTOR UPA1858GR-9JG-E2-A
Q053	8-729-101-07	TRANSISTOR 2SB798-DL
Q054	6-550-234-01	TRANSISTOR UNR32A300LS0
Q055	6-550-406-01	TRANSISTOR MCH3335-S-TL-E
Q056	6-550-559-01	TRANSISTOR XN0NE9200LS0
Q057	6-550-559-01	TRANSISTOR XN0NE9200LS0
Q058	6-550-559-01	TRANSISTOR XN0NE9200LS0
Q059	6-550-559-01	TRANSISTOR XN0NE9200LS0
Q060	6-550-559-01	TRANSISTOR XN0NE9200LS0
Q061	6-550-559-01	TRANSISTOR XN0NE9200LS0
Q062	6-550-560-01	TRANSISTOR CPH5819-TL-E
Q063	8-729-101-07	TRANSISTOR 2SB798-DL
Q064	6-550-237-01	TRANSISTOR 2SC5658T2LQ/R
Q065	6-550-232-01	TRANSISTOR 2SA2029T2LQ/R
Q066	6-550-237-01	TRANSISTOR 2SC5658T2LQ/R
Q067	6-550-232-01	TRANSISTOR 2SA2029T2LQ/R
Q068	6-550-237-01	TRANSISTOR 2SC5658T2LQ/R
Q069	8-729-053-52	TRANSISTOR HN1C01FE-Y/GR (TPLR3)
Q070	8-729-053-52	TRANSISTOR HN1C01FE-Y/GR (TPLR3)
Q071	6-550-232-01	TRANSISTOR 2SA2029T2LQ/R
Q072	8-729-053-52	TRANSISTOR HN1C01FE-Y/GR (TPLR3)
Q073	8-729-053-54	TRANSISTOR HN1A01FE-Y/GR (TPLR3)
Q074	8-729-053-54	TRANSISTOR HN1A01FE-Y/GR (TPLR3)
Q075	6-550-234-01	TRANSISTOR UNR32A300LS0
Q201	6-550-758-01	TRANSISTOR DTC113TMT2L
Q202	8-729-054-51	TRANSISTOR UP04116008S0

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

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Ref. No.	Part No.	Description			
Q203	6-550-237-01	TRANSISTOR	2SC5658T2LQ/R		
Q302	6-550-383-01	TRANSISTOR	HN4A71FK (TE85R)		
Q304	8-729-054-48	TRANSISTOR	UP04601008S0		
Q306	6-550-232-01	TRANSISTOR	2SA2029T2LQ/R		
Q401	6-550-283-01	TRANSISTOR	UNR32A600LS0		
Q481	8-729-047-19	TRANSISTOR	2SA1965-S-TL		
Q482	6-550-232-01	TRANSISTOR	2SA2029T2LQ/R		
Q483	8-729-054-48	TRANSISTOR	UP04601008S0		
Q484	6-550-234-01	TRANSISTOR	UNR32A300LS0		
Q485	6-550-240-01	TRANSISTOR	DTA114TMT2L		
Q701	8-729-041-43	TRANSISTOR	HN1L02FU (TE85R)		
		< RESISTOR >			
R001	1-218-949-11	RES-CHIP	470	5%	1/16W
R002	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R004	1-211-977-11	METAL CHIP	22	0.5%	1/10W
R005	1-218-969-11	RES-CHIP	22K	5%	1/16W (TRV228E)
R005	1-218-974-11	RES-CHIP	56K	5%	1/16W (TRV428E)
R005	1-218-977-11	RES-CHIP	100K	5%	1/16W (TRV128/TRV228)
R006	1-218-965-11	RES-CHIP	10K	5%	1/16W (TRV328/TRV428)
R006	1-218-973-11	RES-CHIP	47K	5%	1/16W (TRV128/TRV228)
R006	1-218-975-11	RES-CHIP	68K	5%	1/16W (TRV428E)
R006	1-218-977-11	RES-CHIP	100K	5%	1/16W (TRV228E)
R007	1-208-683-11	METAL CHIP	1K	0.5%	1/16W
R010	1-208-707-11	METAL CHIP	10K	0.5%	1/16W
R011	1-218-953-11	RES-CHIP	1K	5%	1/16W
R014	1-218-940-11	RES-CHIP	82	5%	1/16W
R018	1-218-943-11	RES-CHIP	150	5%	1/16W
R021	1-218-943-11	RES-CHIP	150	5%	1/16W
R022	1-218-953-11	RES-CHIP	1K	5%	1/16W
R051	1-218-953-11	RES-CHIP	1K	5%	1/16W
R052	1-220-200-81	RES-CHIP	30K	5%	1/16W
R053	1-218-977-11	RES-CHIP	100K	5%	1/16W
R054	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R061	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R062	1-218-989-11	RES-CHIP	1M	5%	1/16W
R063	1-218-973-11	RES-CHIP	47K	5%	1/16W
R064	1-216-797-11	METAL CHIP	10	5%	1/10W
R065	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R066	1-218-970-11	RES-CHIP	27K	5%	1/16W
R067	1-218-954-11	RES-CHIP	1.2K	5%	1/16W
R068	1-218-963-11	RES-CHIP	6.8K	5%	1/16W
R069	1-218-964-11	RES-CHIP	8.2K	5%	1/16W
R070	1-218-971-11	RES-CHIP	33K	5%	1/16W
R071	1-218-965-11	RES-CHIP	10K	5%	1/16W
R072	1-218-953-11	RES-CHIP	1K	5%	1/16W
R073	1-218-953-11	RES-CHIP	1K	5%	1/16W
R074	1-208-709-11	METAL CHIP	12K	0.5%	1/16W
R075	1-218-953-11	RES-CHIP	1K	5%	1/16W
R076	1-218-990-11	SHORT CHIP	0		
R077	1-218-978-11	RES-CHIP	120K	5%	1/16W
R078	1-208-715-11	METAL CHIP	22K	0.5%	1/16W

Ref. No.	Part No.	Description			
R082	1-216-789-11	METAL CHIP	2.2	5%	1/10W
R083	1-218-949-11	RES-CHIP	470	5%	1/16W
R085	1-218-977-11	RES-CHIP	100K	5%	1/16W
R086	1-218-973-11	RES-CHIP	47K	5%	1/16W
R087	1-218-977-11	RES-CHIP	100K	5%	1/16W
R089	1-218-977-11	RES-CHIP	100K	5%	1/16W
R090	1-218-977-11	RES-CHIP	100K	5%	1/16W
R091	1-218-969-11	RES-CHIP	22K	5%	1/16W
R092	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R093	1-218-969-11	RES-CHIP	22K	5%	1/16W
R094	1-218-969-11	RES-CHIP	22K	5%	1/16W
R095	1-218-977-11	RES-CHIP	100K	5%	1/16W
R096	1-208-935-11	METAL CHIP	100K	0.5%	1/16W
R097	1-208-715-11	METAL CHIP	22K	0.5%	1/16W
R098	1-218-963-11	RES-CHIP	6.8K	5%	1/16W
R099	1-208-707-11	METAL CHIP	10K	0.5%	1/16W
R100	1-208-707-11	METAL CHIP	10K	0.5%	1/16W
R101	1-208-943-11	METAL CHIP	220K	0.5%	1/16W
R102	1-208-935-11	METAL CHIP	100K	0.5%	1/16W
R103	1-208-721-11	METAL CHIP	39K	0.5%	1/16W
R104	1-208-908-11	METAL CHIP	7.5K	0.5%	1/16W
R105	1-208-935-11	METAL CHIP	100K	0.5%	1/16W
R106	1-208-927-11	METAL CHIP	47K	0.5%	1/16W
R107	1-218-964-11	RES-CHIP	8.2K	5%	1/16W
R109	1-218-990-11	SHORT CHIP	0		
R110	1-208-943-11	METAL CHIP	220K	0.5%	1/16W
R111	1-208-931-11	METAL CHIP	68K	0.5%	1/16W
R114	1-216-295-91	SHORT CHIP	0		
R116	1-216-295-91	SHORT CHIP	0		
R152	1-216-864-11	SHORT CHIP	0		
R155	1-218-977-11	RES-CHIP	100K	5%	1/16W
R162	1-218-989-11	RES-CHIP	1M	5%	1/16W
R163	1-218-990-11	SHORT CHIP	0		
R164	1-218-985-11	RES-CHIP	470K	5%	1/16W
R203	1-208-635-11	METAL CHIP	10	0.5%	1/16W
R204	1-218-989-11	RES-CHIP	1M	5%	1/16W
R205	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R206	1-218-965-11	RES-CHIP	10K	5%	1/16W
R207	1-218-981-11	RES-CHIP	220K	5%	1/16W
R208	1-218-985-11	RES-CHIP	470K	5%	1/16W
R209	1-218-985-11	RES-CHIP	470K	5%	1/16W
R210	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R211	1-218-963-11	RES-CHIP	6.8K	5%	1/16W
R212	1-218-985-11	RES-CHIP	470K	5%	1/16W
R213	1-218-947-11	RES-CHIP	330	5%	1/16W
R214	1-218-953-11	RES-CHIP	1K	5%	1/16W
R215	1-218-965-11	RES-CHIP	10K	5%	1/16W
R216	1-218-973-11	RES-CHIP	47K	5%	1/16W
R271	1-218-989-11	RES-CHIP	1M	5%	1/16W (TRV328/TRV428/TRV428E)
R272	1-218-965-11	RES-CHIP	10K	5%	1/16W (TRV328/TRV428/TRV428E)
R273	1-218-965-11	RES-CHIP	10K	5%	1/16W (TRV328/TRV428/TRV428E)
R274	1-218-989-11	RES-CHIP	1M	5%	1/16W (TRV328/TRV428/TRV428E)
R302	1-218-965-11	RES-CHIP	10K	5%	1/16W
R303	1-218-954-11	RES-CHIP	1.2K	5%	1/16W

Ref. No.	Part No.	Description			
R306	1-218-949-11	RES-CHIP	470	5%	1/16W
R307	1-218-962-11	RES-CHIP	5.6K	5%	1/16W
R308	1-218-953-11	RES-CHIP	1K	5%	1/16W
R309	1-218-963-11	RES-CHIP	6.8K	5%	1/16W
R310	1-218-959-11	RES-CHIP	3.3K	5%	1/16W
R311	1-218-941-81	RES-CHIP	100	5%	1/16W
R314	1-218-967-11	RES-CHIP	15K	5%	1/16W
R315	1-218-952-11	RES-CHIP	820	5%	1/16W
R316	1-218-966-11	RES-CHIP	12K	5%	1/16W
R317	1-218-949-11	RES-CHIP	470	5%	1/16W
R318	1-218-945-11	RES-CHIP	220	5%	1/16W
R319	1-218-962-11	RES-CHIP	5.6K	5%	1/16W
R320	1-218-966-11	RES-CHIP	12K	5%	1/16W
R321	1-218-946-11	RES-CHIP	270	5%	1/16W
R322	1-218-946-11	RES-CHIP	270	5%	1/16W
R323	1-218-966-11	RES-CHIP	12K	5%	1/16W
R324	1-218-966-11	RES-CHIP	12K	5%	1/16W
R325	1-218-946-11	RES-CHIP	270	5%	1/16W
R327	1-218-966-11	RES-CHIP	12K	5%	1/16W
R328	1-218-946-11	RES-CHIP	270	5%	1/16W
R330	1-218-972-11	RES-CHIP	39K	5%	1/16W
R331	1-218-989-11	RES-CHIP	1M	5%	1/16W
R332	1-218-967-11	RES-CHIP	15K	5%	1/16W
R333	1-218-966-11	RES-CHIP	12K	5%	1/16W
R334	1-218-949-11	RES-CHIP	470	5%	1/16W
R335	1-218-953-11	RES-CHIP	1K	5%	1/16W
R336	1-218-965-11	RES-CHIP	10K	5%	1/16W
R339	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R341	1-218-953-11	RES-CHIP	1K	5%	1/16W
R401	1-218-973-11	RES-CHIP	47K	5%	1/16W
R402	1-218-983-11	RES-CHIP	330K	5%	1/16W
R403	1-218-949-11	RES-CHIP	470	5%	1/16W
R404	1-218-946-11	RES-CHIP	270	5%	1/16W
R405	1-218-990-11	SHORT CHIP	0		
R409	1-216-808-11	METAL CHIP	82	5%	1/10W
R410	1-216-789-11	METAL CHIP	2.2	5%	1/10W
R411	1-216-789-11	METAL CHIP	2.2	5%	1/10W
R412	1-216-789-11	METAL CHIP	2.2	5%	1/10W
R413	1-218-965-11	RES-CHIP	10K	5%	1/16W (TRV228E/TRV428E)
R413	1-218-990-11	SHORT CHIP	0		(TRV128/TRV228/TRV328/TRV428)
R414	1-218-967-11	RES-CHIP	15K	5%	1/16W (TRV128/TRV228/TRV328/TRV428)
R414	1-218-973-11	RES-CHIP	47K	5%	1/16W (TRV228E/TRV428E)
R424	1-218-965-11	RES-CHIP	10K	5%	1/16W
R426	1-218-967-11	RES-CHIP	15K	5%	1/16W
R427	1-218-965-11	RES-CHIP	10K	5%	1/16W (TRV228E/TRV428E)
R427	1-218-990-11	SHORT CHIP	0		(TRV128/TRV228/TRV328/TRV428)
R431	1-216-864-11	SHORT CHIP	0		
R481	1-218-936-11	RES-CHIP	39	5%	1/16W (TRV228E/TRV428E)
R481	1-218-938-11	RES-CHIP	56	5%	1/16W (TRV128/TRV228/TRV328/TRV428)
R482	1-218-950-11	RES-CHIP	560	5%	1/16W
R483	1-218-941-81	RES-CHIP	100	5%	1/16W
R484	1-218-970-11	RES-CHIP	27K	5%	1/16W
R487	1-218-970-11	RES-CHIP	27K	5%	1/16W
R488	1-218-945-11	RES-CHIP	220	5%	1/16W
R489	1-218-945-11	RES-CHIP	220	5%	1/16W
R490	1-218-946-11	RES-CHIP	270	5%	1/16W
R491	1-218-945-11	RES-CHIP	220	5%	1/16W
R492	1-218-971-11	RES-CHIP	33K	5%	1/16W
R493	1-218-958-11	RES-CHIP	2.7K	5%	1/16W
R494	1-218-958-11	RES-CHIP	2.7K	5%	1/16W
R495	1-208-939-11	METAL CHIP	150K	0.5%	1/16W
R601	1-218-941-81	RES-CHIP	100	5%	1/16W
R602	1-218-965-11	RES-CHIP	10K	5%	1/16W
R616	1-218-953-11	RES-CHIP	1K	5%	1/16W
R619	1-218-953-11	RES-CHIP	1K	5%	1/16W
R636	1-218-977-11	RES-CHIP	100K	5%	1/16W
R704	1-218-973-11	RES-CHIP	47K	5%	1/16W
R707	1-208-935-11	METAL CHIP	100K	0.5%	1/16W
R708	1-218-989-11	RES-CHIP	1M	5%	1/16W
R709	1-219-570-11	METAL CHIP	10M	5%	1/10W
R710	1-218-985-11	RES-CHIP	470K	5%	1/16W
R711	1-208-927-11	METAL CHIP	47K	0.5%	1/16W
R712	1-218-965-11	RES-CHIP	10K	5%	1/16W
R713	1-218-990-11	SHORT CHIP	0		
R714	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R715	1-218-953-11	RES-CHIP	1K	5%	1/16W
R716	1-218-989-11	RES-CHIP	1M	5%	1/16W
R717	1-218-949-11	RES-CHIP	470	5%	1/16W
R718	1-218-977-11	RES-CHIP	100K	5%	1/16W
R806	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R807	1-208-927-11	METAL CHIP	47K	0.5%	1/16W
R810	1-218-965-11	RES-CHIP	10K	5%	1/16W
R811	1-218-973-11	RES-CHIP	47K	5%	1/16W
R812	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R815	1-218-979-11	RES-CHIP	150K	5%	1/16W
R817	1-218-985-11	RES-CHIP	470K	5%	1/16W
R818	1-218-990-11	SHORT CHIP	0		
R819	1-218-952-11	RES-CHIP	820	5%	1/16W

< COMPOSITION CIRCUIT BLOCK >

RB201	1-234-375-21	RES, NETWORK 1K x 4 (1005)
RB202	1-234-379-21	RES, NETWORK 22K x 4 (1005)
RB203	1-234-380-21	RES, NETWORK 47K x 4 (1005)
RB271	1-234-379-21	RES, NETWORK 22K x 4 (1005) (TRV328/TRV428/TRV428E)
RB301	1-234-378-21	RES, NETWORK 10K x 4 (1005)
RB302	1-234-376-21	RES, NETWORK 2.2K x 4 (1005)
RB401	1-234-378-21	RES, NETWORK 10K x 4 (1005)
RB481	1-234-379-21	RES, NETWORK 22K x 4 (1005)
RB482	1-234-383-21	RES, NETWORK 470K x 4 (1005)
RB483	1-234-376-21	RES, NETWORK 2.2K x 4 (1005)
RB601	1-234-381-21	RES, NETWORK 100K x 4 (1005)
RB605	1-234-375-21	RES, NETWORK 1K x 4 (1005)
RB606	1-234-378-21	RES, NETWORK 10K x 4 (1005)
RB608	1-234-384-11	RES, NETWORK 1M x 4 (1005)
RB610	1-234-377-21	RES, NETWORK 4.7K x 4 (1005) (TRV328/TRV428/TRV428E)
RB611	1-234-381-21	RES, NETWORK 100K x 4 (1005)

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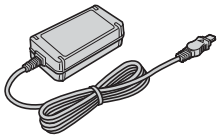
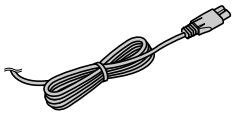
Ref. No.	Part No.	Description
RB612	1-234-380-21	RES, NETWORK 47K x 4 (1005)
RB613	1-234-377-21	RES, NETWORK 4.7K x 4 (1005)
RB701	1-234-383-21	RES, NETWORK 470K x 4 (1005)
RB703	1-234-375-21	RES, NETWORK 1K x 4 (1005)
RB704	1-234-375-21	RES, NETWORK 1K x 4 (1005)
RB705	1-234-375-21	RES, NETWORK 1K x 4 (1005)
RB706	1-234-375-21	RES, NETWORK 1K x 4 (1005)
RB708	1-234-381-21	RES, NETWORK 100K x 4 (1005)
RB801	1-234-702-11	RES, NETWORK 68 x 4 (1005)
		< VIBRATOR >
X151	1-760-320-11	VIBRATOR, CRYSTAL (28.636363MHZ) (TRV128/TRV228/TRV328/TRV428)
X151	1-760-321-11	VIBRATOR, CRYSTAL (28.375MHz) (TRV228E/TRV428E)
X601	1-760-655-41	VIBRATOR, CRYSTAL (20MHz)
X701	1-795-244-11	VIBRATOR, CERAMIC (10MHz)
X702	1-760-458-21	VIBRATOR, CRYSTAL (32.768kHz)

Checking supplied accessories.

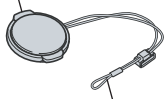


AC-L15A/L15B AC Adaptor (1)
⚠ 1-477-533-32 (Middle East area)
⚠ 1-477-533-51
(EXCEPT Middle East area, BR)

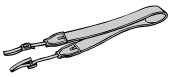


Power cord (1)
⚠ 1-690-827-12 (AEP, NE, EE)
⚠ 1-696-819-21 (AUS)
⚠ 1-769-608-11 (E)
⚠ 1-775-843-52 (UK)
⚠ 1-783-374-11 (HK)
⚠ 1-783-952-21 (AR)
⚠ 1-790-542-12 (US, CND)
⚠ 1-827-160-11 (JE)

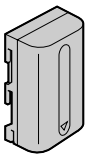
Lens cap (1)
X-3952-971-1



Cap string (1)
3-979-194-12

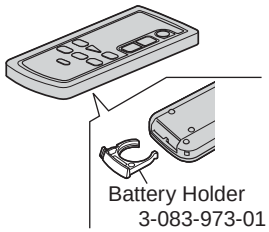


Shoulder strap (1)
3-987-015-01



Rechargeable battery pack
NP-FM30 (1)
⚠ A-7096-387-A (US, CND)
⚠ A-7096-388-B
(EXCEPT US, CND)

A/V connecting cable (1)
1-783-738-91 (AEP, UK, NE, EE)
1-824-009-31
(EXCEPT AEP, UK, NE, EE)

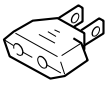


Battery Holder
3-083-973-01

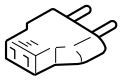
Wireless Remote Commander
RMT-833 (1)
1-477-898-11 (EXCEPT TRV128/
TRV228E: E1/TRV328/TRV428E: E1)
1-477-898-31
(TRV228E: E2/TRV428E: E2)

(Note) E1: No indication of country of origin.
E2: There is indication of country of origin.

21-pin adaptor (1)
1-770-783-21 (AEP, UK, NE, EE)



Conversion 2P adaptor (1)
⚠ 1-569-008-12 (E, HK)



Conversion 2P adaptor (1)
⚠ 1-569-007-12 (JE)

Other accessories

3-087-918-11 MANUAL, INSTRUCTION (ENGLISH)
(TRV128: US, CND, E/TRV228/TRV328/TRV428)
3-087-918-21 MANUAL, INSTRUCTION (FRENCH)
(TRV128: CND/TRV328: CND)
3-087-918-31 MANUAL, INSTRUCTION (SPANISH, PORTUGUESE)
(TRV128: E, MX/TRV228/TRV328: E/TRV428)
3-087-918-41 MANUAL, INSTRUCTION (TRADITIONAL CHINESE)
(TRV228)
3-087-918-51 MANUAL, INSTRUCTION (KOREA) (TRV428)
3-087-918-61 MANUAL, INSTRUCTION (ARABIC) (TRV228)
3-087-919-11 MANUAL, INSTRUCTION (ENGLISH)
(TRV228E: AEP, UK, E/TRV428E: AEP, E, AUS, HK, JE)
3-087-919-21 MANUAL, INSTRUCTION (FRENCH)
(TRV228E: AEP, E/TRV428E: AEP, E, JE)
3-087-919-31 MANUAL, INSTRUCTION (SPANISH, PORTUGUESE)
(TRV228E: AEP/TRV428E: AEP)
3-087-919-41 MANUAL, INSTRUCTION (ITALIAN, GREEK)
(TRV228E: AEP/TRV428E: AEP)
3-087-919-51 MANUAL, INSTRUCTION (GERMAN, DUTCH)
(TRV228E: AEP/TRV428E: AEP)
3-087-919-61 MANUAL, INSTRUCTION (SWEDISH, RUSSIAN)
(TRV228E: NE/TRV428E: NE, JE)
3-087-919-71 MANUAL, INSTRUCTION (DANISH, FINNISH)
(TRV228E: NE/TRV428E: NE)
3-087-919-81 MANUAL, INSTRUCTION (POLISH, CZECH)
(TRV228E: EE/TRV428E: EE)
3-087-919-91 MANUAL, INSTRUCTION (HUNGALIAN, SLOVAK)
(TRV228E: EE/TRV428E: EE)
3-087-920-11 MANUAL, INSTRUCTION (ARABIC, PERSIAN)
(TRV228E: E/TRV428E: E)
3-087-920-21 MANUAL, INSTRUCTION (TRADITIONAL CHINESE)
(TRV428E: HK)
3-087-920-31 MANUAL, INSTRUCTION (SIMPLIFIED CHINESE)
(TRV228E: E/TRV428E: E, JE)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

2005F0500-1
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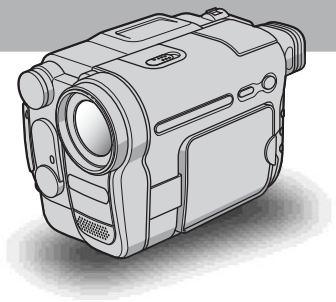
Published by DI Technical Support Department

SONY

3-087-918-**11**(1)

Camera Operations Guide

Read this first



Video Camera Recorder/Digital Video Camera Recorder

HANDYCAM

video Hi8

CCD-TRV128/TRV228/TRV328/TRV428

Digital 8

DCR-TRV260/TRV265

InfoLITHIUM M SERIES

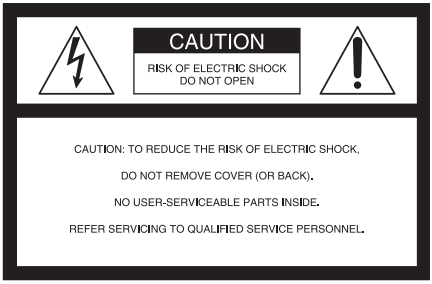
© 2004 Sony Corporation

Read this first

Before operating the unit, please read this manual thoroughly, and retain it for future reference.

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

For customers in the U.S.A. and CANADA

CAUTION

TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.

RECYCLING LITHIUM-ION BATTERIES

Lithium-Ion batteries are recyclable.

You can help preserve our environment by returning your used rechargeable batteries to the collection and recycling location nearest you.

For more information regarding recycling of rechargeable batteries, call toll free 1-800-822- 8837, or visit http://www.rbrc.org/

Caution: Do not handle damaged or leaking Lithium-Ion batteries.

For customers in the U.S.A.

If you have any questions about this product, you may call:

Sony Customer Information Center 1-800-222-SONY (7669)

The number below is for FCC related matters only.

Regulatory Information

Declaration of Conformity

Trade Name: SONY
Model No.: DCR-TRV260
Responsible Party: Sony Electronics Inc.
Address: 680 Kinderkamack Road, Oradell, NJ 07649 U.S.A.
Telephone No.: 201-930-6972
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Owner's Record

The model and serial numbers are located on the bottom. Record the serial number in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. _____-TRV_____
Serial No. _____
Model No.AC-_____
Serial No._____

CAUTION

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

Note:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

– Reorient or relocate the receiving antenna.
– Increase the separation between the equipment and receiver.
– Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
– Consult a Sony dealer or an experienced radio/TV technician for help.

The interface cable supplied must be used with the equipment in order to comply with the limits for a digital device pursuant to Subpart B of Part 15 of FCC Rules.

Notes on use

Note on a cassette tape

You can use standard 8 mm 8 and Hi8 Hi8, Digital8 video cassettes on your camcorder. See page 82 for details.

Notes on recording

- Before starting to record, test the recording function to make sure the picture and sound are recorded without any problems.
- Compensation for the contents of recordings cannot be provided, even if recording or playback is not possible due to a malfunction of the camcorder, etc.
- TV color systems differ depending on the country/regions. To view your recordings on a TV, you need an NTSC system-based TV.
- Television programs, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the copyright laws.

Notes on the LCD panel, viewfinder, and lens

- The LCD screen and the viewfinder are manufactured using extremely high-precision technology, so over 99.99% of the pixels are operational for effective use.
  However, there may be some tiny black points and/or bright points (white, red, blue, or green in color) that appear constantly on the LCD screen and the viewfinder.
  These points are normal results of the manufacturing process and do not affect the recording in any way.
- Exposing the LCD screen, the viewfinder, or the lens to direct sunlight for long periods of time may cause malfunctions. Be careful when placing the camera near a window or outdoors.
- Do not aim at the sun. Doing so might cause your camcorder to malfunction. Take pictures of the sun only in low light conditions, such as at dusk.

Note on connecting other device

Before connecting your camcorder to other device such as a VCR or a computer with an USB or i.LINK cable, be sure to insert the connector plug in the proper direction. If you insert the connector plug forcibly in the wrong direction, the terminal may be damaged. This may cause a malfunction of your camcorder.

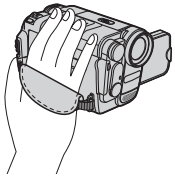
Notes on using this manual

- The images of the LCD screen and the viewfinder used on this manual are captured using a digital still camera, and thus may appear different from what you see.
- In this instruction manual, each model is indicated as follows.
  CCD-TRV128: Hi8 TRV128
  CCD-TRV228: Hi8 TRV228
  CCD-TRV328: Hi8 TRV328
  CCD-TRV428: Hi8 TRV428
  DCR-TRV260: TRV260
  DCR-TRV265: TRV265
  Instructions with no specific model names are for all models.
  Instructions with specific model names are for the indicated models only.
  Before you start reading this manual, check the model name of your camcorder.
- The illustrations used on this manual are based on the model DCR-TRV265.

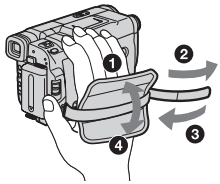
➡*continued*

Notes on using the camcorder

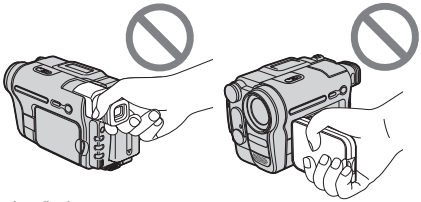
• Hold your camcorder correctly.



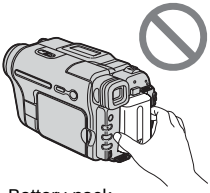
• To ensure a good grip, fasten the grip belt as shown in the following illustration.



• You can change the language to be used for screen display on your camcorder (p. 19).
• Do not hold the camcorder by the following parts.

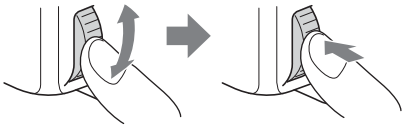


Viewfinder LCD panel



Battery pack

• Turn the SEL/PUSH EXEC dial to select desired item, then press the dial to decide.



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CCD-TRV328: Hi8 TRV328 DCR-TRV265: TRV265

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For DV TRV260/265:
Refer also to other operating instructions supplied with your camcorder:

- Editing images with your computer
  ➔Computer Applications Guide

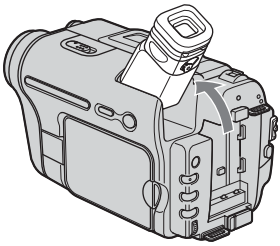
Quick Start Guide

Recording movies

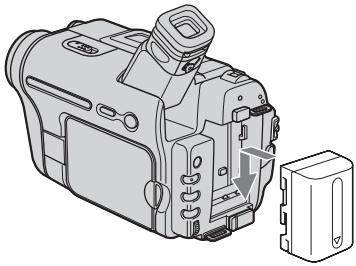
1 Attach the charged battery pack to the camcorder.

To charge the battery, see page 12.

❶ Lift up the viewfinder.



❷ Slide the battery pack in the direction of the arrow until it clicks.

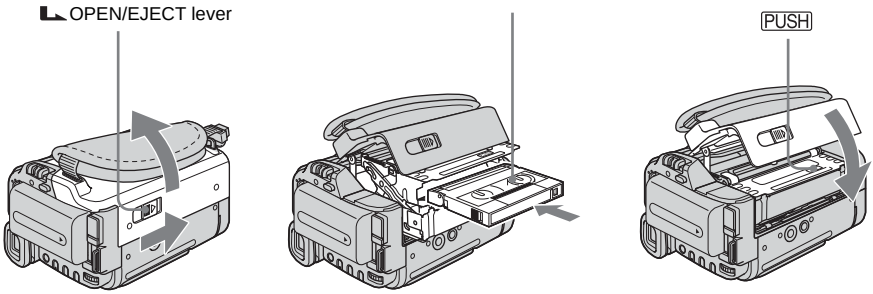


2 Insert a cassette into the camcorder.

❶ Slide the ⌞ OPEN/ EJECT lever in the direction of the arrow to open the lid.
The cassette compartment comes out automatically.

❷ Insert the cassette with its window-side facing up, then push the center of the back of the cassette.

❸ Press PUSH.
Close the cassette lid after the cassette compartment slides back in by itself.



3 Start recording while checking the subject on the LCD screen.

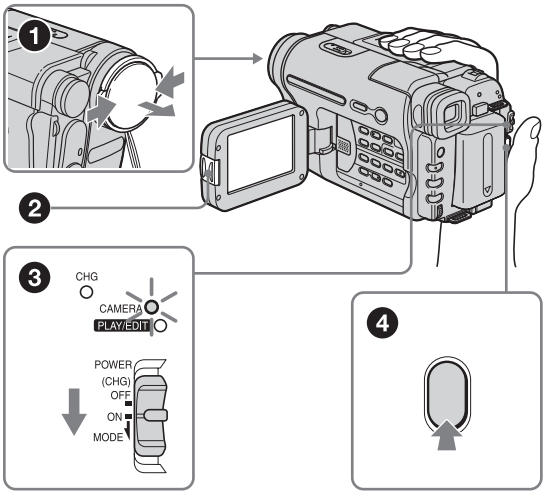
The date and time is not set up in the default setting. To set the date and time, see page 17.

❶ **Remove the lens cap.**
Lens cap is not attached when you purchase your camcorder (p. 91).

❷ **Press OPEN and open the LCD panel.**

❸ **While pressing the green button, slide the POWER switch down to light up the CAMERA lamp.**
The power turns on.

❹ **Press REC START/STOP.**
Recording starts. To change to standby mode, press REC START/STOP again.



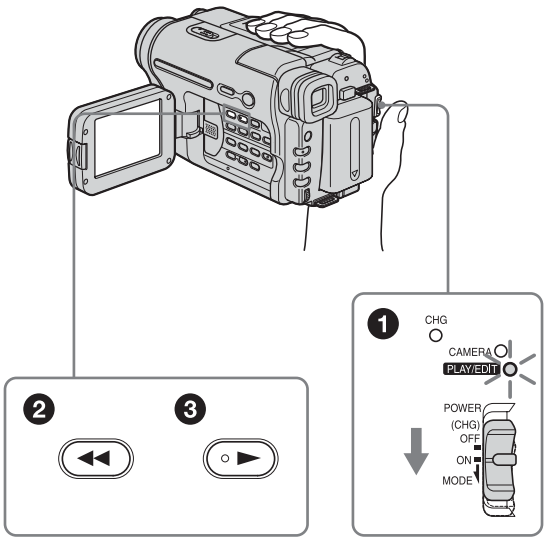
4 View the recorded picture on the LCD screen.

❶ **Slide the POWER switch repeatedly until the PLAY/EDIT lamp lights up.**

❷ **Press ◀◀ (rewind).**

❸ **Press ▶ (play) to start the playback.**
To stop, press ■.

To turn off the power, slide the POWER switch up to (CHG) OFF.

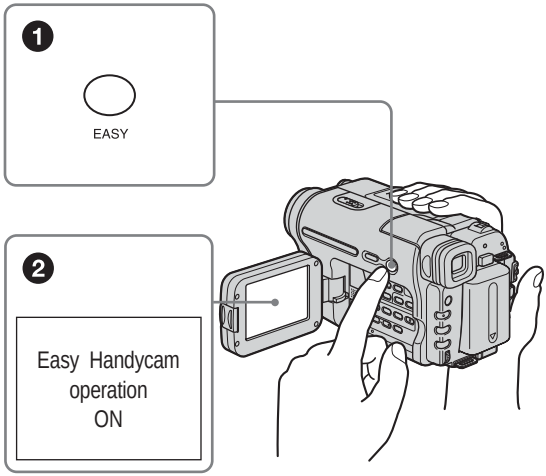


Recording/Playing back with ease

By switching to Easy Handycam operation, recording/playback operation becomes even easier.
Easy Handycam operation allows easy recording/playback for even first time users by providing only the basic functions for recording/playback.

Press EASY when recording/ playing back.

EASY lights up in blue (❶) and screen font size increases (❷) during Easy Handycam operation.

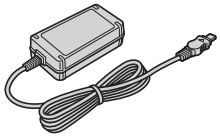


For details, see instructions for each operation.
See page 26 for recording, page 36 for playback.

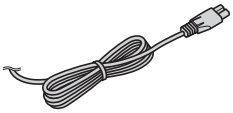
Step 1: Checking supplied items

Make sure you have following items supplied with your camcorder.
The number in parentheses indicates the number of that item supplied.

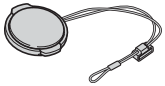
AC Adaptor (1)



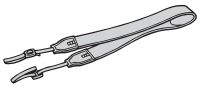
Power cord (1)



Lens cap (1)
See page 91 on how to attach the lens cap.

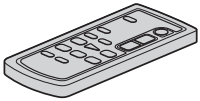


Shoulder strap (1)
See page 94 on how to attach the shoulder strap.



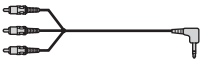
Wireless Remote Commander (1)
A button-type lithium battery is already installed.
RMT-833: (Hi8 TRV228/428)

RMT-830: (TRV265)

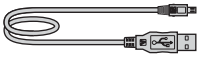


A/V connecting cable (1)
Monaural: (Hi8 TRV128/228/328/428)

Stereo: (TRV260/265)



USB cable (1)
(TRV260/265)



Rechargeable battery pack NP-FM30 (1)

CD-ROM “SPVD-012 USB Driver” (1)
(TRV260/265)

Camera Operations Guide (This manual) (1)

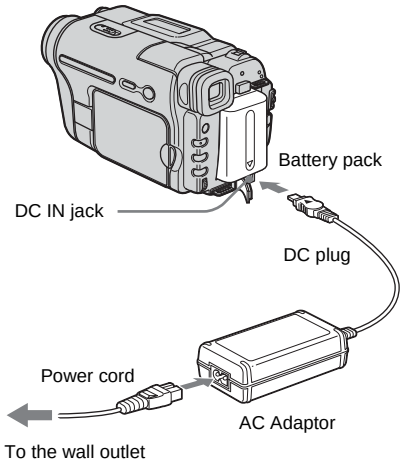
Computer Applications Guide (1)
(TRV260/265)

Step 2: Charging the battery pack

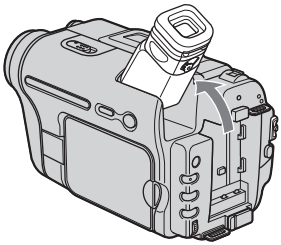
You can charge the battery by attaching the **"InfoLITHIUM" battery pack (M series)** to your camcorder.

Notes

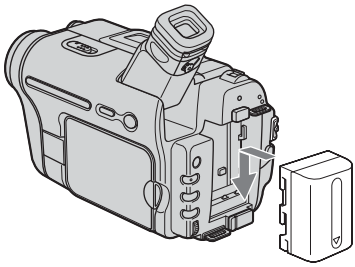
- You cannot use batteries other than the "InfoLITHIUM" battery pack (M series) (p. 83).
- Do not short-circuit the DC plug of the AC Adaptor or battery terminals with any metallic objects. This may cause a malfunction.
- Use a nearby wall outlet when using the AC Adaptor. Disconnect the AC Adaptor from the wall outlet immediately if any malfunction occurs.



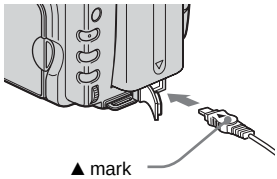
1 **Lift up the viewfinder.**



2 **Attach the battery pack by sliding it in the direction of the arrow until it clicks.**



3 **With the ▲ mark on the DC plug facing up, connect the AC Adaptor to the DC IN jack on your camcorder.**

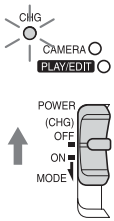


4 **Connect the power cord to the AC Adaptor.**

5 **Connect the power cord to the wall outlet.**

6 **Slide the POWER switch up to (CHG) OFF.**

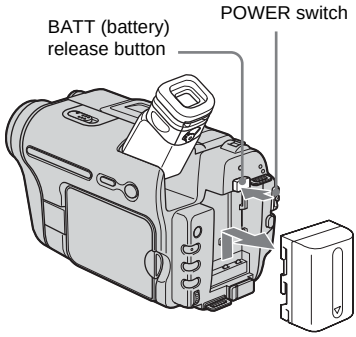
The CHG (charge) lamp lights up and charging starts.



After charging the battery

The CHG (charge) lamp turns off when the battery is fully charged. Disconnect the AC Adaptor from the DC IN jack.

To remove the battery pack



1 **Lift up the viewfinder.**

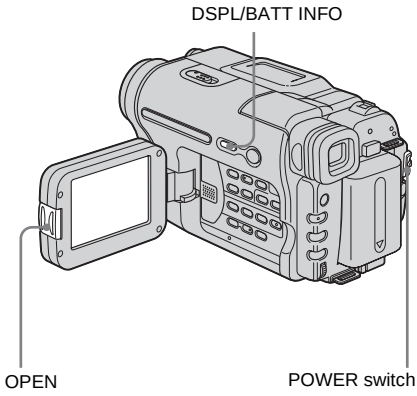
2 **Set the POWER switch to (CHG) OFF.**

3 **Slide the battery pack out in the direction of the arrow while pressing the BATT (battery) release button down.**

Note

- If you do not use the battery pack for a long time, use up the battery pack completely before storing it. See page 83 about storage of the battery pack.

To check the remaining battery – Battery Info

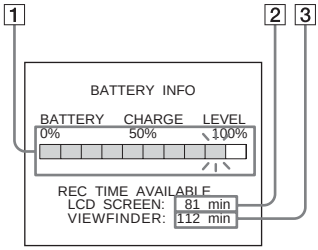


You can check the battery's current charge level and its current remaining recording time both during charging or when the power is turned off.

1 **Set the POWER switch to (CHG) OFF.**

2 **Press OPEN and open the LCD panel.**

3 **Press DSPL/BATT INFO.**
The battery information appears for about 7 seconds.
Keep the button pressed to view it for about 20 seconds.



1 **Battery charge level: Displays approximate remaining amount of power left in the battery pack.**

2 **Approximate possible recording time using the LCD panel.**

3 **Approximate possible recording time using the viewfinder.**

Charging time

Approximate number of minutes required when you fully charge a fully discharged battery pack at 25°C (77°F). (10 – 30°C (50 – 86°F) recommended.)

Battery pack	
NP-FM30 (supplied)	145
NP-FM50	150
NP-QM71/QM71D	260
NP-QM91/QM91D	360

Recording time when recording with the LCD screen on

Approximate number of minutes available when you use a fully charged battery pack at 25°C (77°F).

➡*continued*

For Hi8 TRV128/228/328/428:

Battery pack	Continuous recording time	Typical* recording time
NP-FM30 (supplied)	115	55
NP-FM50	185	90
NP-QM71/ QM71D	445	220
NP-QM91/ QM91D	670	335

For TRV260/265:

Battery pack	Continuous recording time	Typical* recording time
NP-FM30 (supplied)	90	50
NP-FM50	145	80
NP-QM71/ QM71D	335	220
NP-QM91/ QM91D	535	300

Recording time when recording with the viewfinder

Approximate number of minutes available when you use a fully charged battery pack at 25°C (77°F).

For Hi8 TRV128/228/328/428:

Battery pack	Continuous recording time	Typical* recording time
NP-FM30 (supplied)	175	85
NP-FM50	280	135
NP-QM71/ QM71D	675	330
NP-QM91/ QM91D	1010	495

For TRV260/265:

Battery pack	Continuous recording time	Typical* recording time
NP-FM30 (supplied)	125	65
NP-FM50	200	105
NP-QM71/ QM71D	485	255
NP-QM91/ QM91D	725	385

* Approximate number of minutes when recording while you repeatedly record, start/stop, slide the POWER switch to change the power mode, and zoom. The actual battery life may be shorter.

Playing time

Approximate number of minutes available when you use a fully charged battery pack at 25°C (77°F).

For Hi8 TRV128/228/328/428:

Battery pack	LCD panel opened	LCD panel closed
NP-FM30 (supplied)	115	185
NP-FM50	185	295
NP-QM71/ QM71D	445	715
NP-QM91/ QM91D	670	1070

For TRV260/265:

Battery pack	LCD panel opened	LCD panel closed
NP-FM30 (supplied)	100	150
NP-FM50	160	240
NP-QM71/ QM71D	390	580
NP-QM91/ QM91D	585	865

Notes

- The power will not be supplied from the battery pack when the AC Adaptor is connected to the DC IN jack of your camcorder, even if its power cord is disconnected from the wall outlet.
- The recording and playback time will be shorter when you use your camcorder in low temperature.
- The CHG (charge) lamp flashes during charging, or the battery information will not be correctly displayed in following conditions.
  – The battery pack is not attached correctly.
  – The battery pack is damaged.
  – The battery pack is fully discharged. (For Battery information only.)

Using an outside power source

You can use the AC Adaptor as the power source when you do not want the battery to run out. While you are using the AC Adaptor, the battery pack will not lose its charge even when it is attached to your camcorder.

PRECAUTION

Even if your camcorder is turned off, AC power (house current) is still supplied to it while connected to the wall outlet via the AC Adaptor.

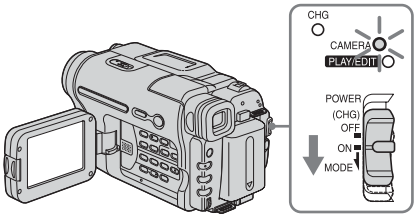
Connect your camcorder as shown in "Charging the battery pack" (p. 12).

Step 3: Turning the power on

You need to slide the POWER switch repeatedly to select the desired power mode to record or play.
When using this camcorder for the first time, the [CLOCK SET] screen appears (p. 17).

While pressing the green button, slide the POWER switch down.

The power turns on.
To enter the recording or playing mode, slide the switch repeatedly until the respective lamp for the desired power mode lights up.



- CAMERA mode: To record on a tape.
- PLAY/EDIT mode: To play or edit pictures on a tape.

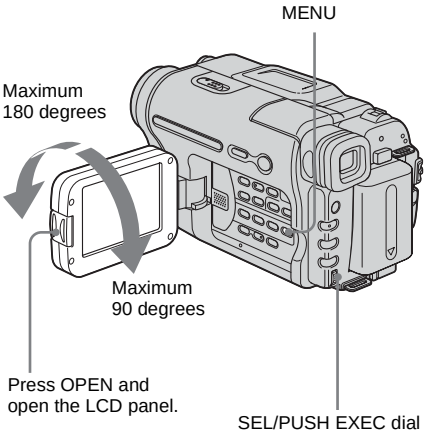
To turn off the power

Slide the POWER switch up to (CHG) OFF.

Step 4: Adjusting the LCD panel and viewfinder

Adjusting the LCD panel

You can adjust the angle and brightness of the LCD panel to meet various recording situations.
Even when there are obstructions between you and the subject, you can check the subject on the LCD screen during recording by adjusting the angle of the LCD panel.



Open the LCD panel 90 degrees to the camcorder, then rotate it to the desired position.

To adjust the brightness of the LCD screen

1 **Press MENU.**

2 **Turn the SEL/PUSH EXEC dial to select (LCD SET), then press the dial.**

3 **Turn the SEL/PUSH EXEC dial to select [LCD BRIGHT], then press the dial (p. 53).**

4 **Adjust the brightness of the LCD screen with the SEL/PUSH EXEC dial, then press the dial.**

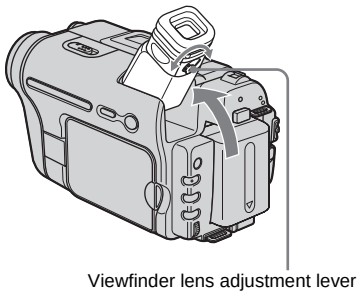
5 **Press MENU.**

Tips

- If you rotate the LCD panel 180 degrees to the lens side, you can close the LCD panel with the LCD screen facing out.
- If you are using the battery pack for power source, you can adjust the brightness by selecting [LCD B.L.] in the (LCD SET) menu (p. 53).
- The recorded picture will not be affected by this setting.
- You can turn off the operation confirmation beep by setting [BEEP] in the ETC (OTHERS) menu to [OFF] (p. 59).

Adjusting the viewfinder

You can view images using the viewfinder when you close the LCD panel. Use the viewfinder when the battery is running out, or when the screen is hard to see.



1 **Lift up the viewfinder.**

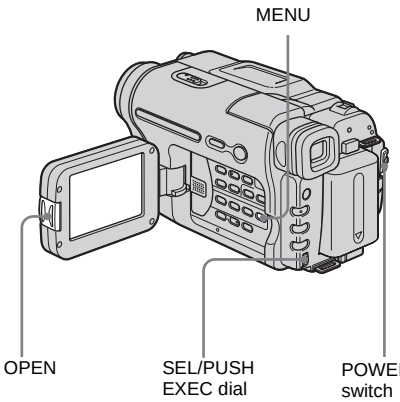
2 **Adjust the viewfinder lens adjustment lever until the picture is clear.**

Step 5: Setting the date and time

Set the date and time when using this camcorder for the first time. If you do not set the date and time, the [CLOCK SET] screen appears every time you turn on your camcorder.

Note

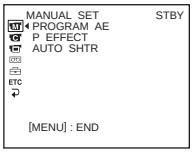
- If you do not use your camcorder for about **3 months**, the built-in rechargeable button-type battery gets discharged and the date and time settings may be cleared from the memory. In that case, charge the rechargeable button-type battery (p. 87) and then set the date and time again.



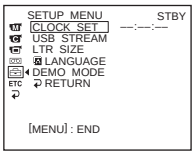
1 **Turn on your camcorder (p. 15).**

2 **Press OPEN and open the LCD panel.**
Proceed to step 6 when you set the clock for the first time.

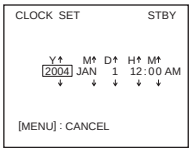
3 **Press MENU.**



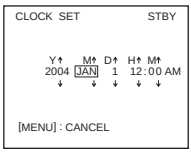
4 **Turn the SEL/PUSH EXEC dial to select (SETUP MENU), then press the dial.**



5 **Turn the SEL/PUSH EXEC dial to select [CLOCK SET], then press the dial.**



6 **Turn the SEL/PUSH EXEC dial to set [Y] (year), then press the dial.**



You can set any year up to the year 2079.

7 **Set [M] (month), [D] (day), [H] (hour) and [M] (minute) in the same way as was done in step 6, then press the dial.**
For midnight, set it to 12:00 AM.
For midday, set it to 12:00 PM.

➡*continued*

To check the preset date and time

For Hi8 TRV128/228/328/428:
Press DATE to display the date indicator.
Press TIME to display the time indicator.
Press DATE (or TIME) and then press TIME (or DATE) to simultaneously display the date and time indicator.
To hide the date and/or time indicator, press DATE and/or TIME again.

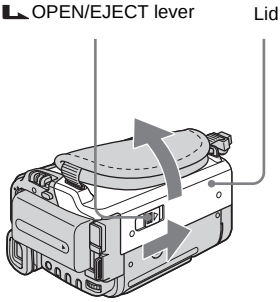
Step 6: Inserting a cassette tape

You can use standard 8 mm 8 and Hi8 Hi8, Digital8 video cassettes on your camcorder. For details on these cassettes (such as write-protection), See page 82.

Notes

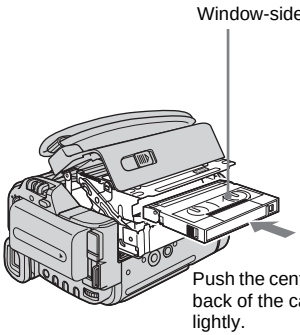
- Do not force the cassette into the compartment. This may cause a malfunction of your camcorder.
- For TRV260/265:
  The recording time when you use your camcorder is half of the indicated time on Hi8 Hi8 tape. If you select the [LP] mode in the menu settings, the recording time is 3/4 of the indicated time on Hi8 Hi8 tape.

1 **Slide the OPEN/EJECT lever in the direction of the arrow and open the lid.**



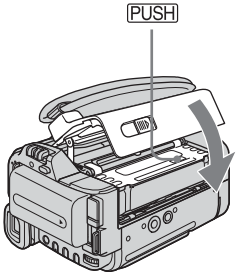
The cassette compartment automatically comes out and opens up.

2 **Insert a cassette with its window-side facing up.**



3 **Press PUSH.**

The cassette compartment automatically slides back in.



4 **Close the lid.**

To eject the cassette

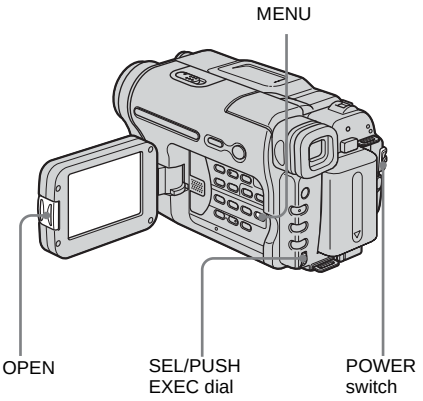
1 **Slide the OPEN/EJECT lever in the direction of the arrow and open the lid.** The cassette compartment automatically comes out.

2 **Take out the cassette, then press PUSH.** The cassette compartment automatically slides back in.

3 **Close the lid.**

Step 7: Setting the screen language

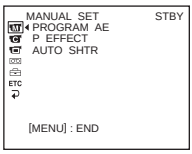
You can select the language to be used on the LCD screen.



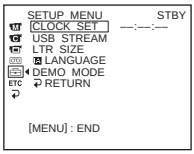
1 **Turn on your camcorder.**

2 **Press OPEN to open the LCD panel.**

3 **Press MENU.**

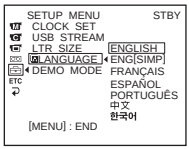


4 **Turn the SEL/PUSH EXEC dial to select (SETUP MENU), then press the dial.**



➡*continued*

5 Turn the SEL/PUSH EXEC dial to select [LANGUAGE], then press the dial.



6 Turn the SEL/PUSH EXEC dial to select the desired language, then press the dial.

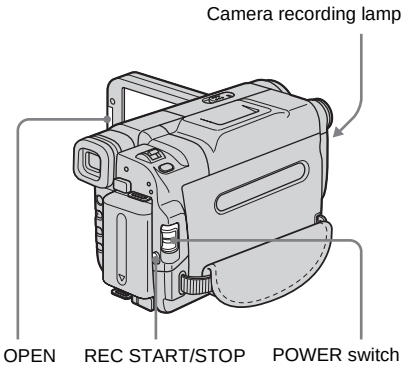
7 Press MENU.

Tip

- Your camcorder offers [ENG [SIMP]] (simplified English) for when you cannot find your native tongue among the options.

Recording movies

Before recording, follow steps 1 to 7 in "Getting started" (p. 11 - p. 19).
For Hi8 TRV128/228/328/428:
Movies will be recorded along with monaural sound.
For TRV260/265:
Movies will be recorded along with stereo sound.



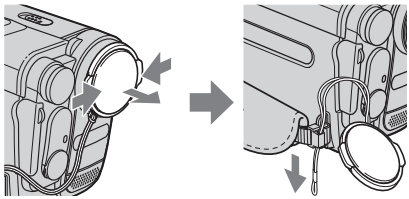
Note

- For Hi8 TRV128/228/328/428:
  The date is automatically recorded for 10 seconds after you start recording (Auto date function). This function works only once a day. See page 57 for details.

Tip

- Performing Easy Handycam operation, even first time users can record easily. For details, see page 26.

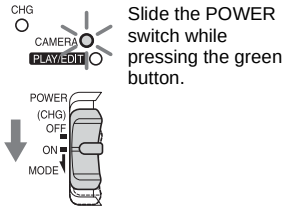
1 Remove the lens cap. Pull the lens cap string down and attach it to the grip belt.



2 Press OPEN and open the LCD panel.

3 Slide the POWER switch until the CAMERA lamp lights up.

Your camcorder is set to the standby mode.



Slide the POWER switch while pressing the green button.

4 Press REC START/STOP.

Recording starts. [REC] appears on the LCD screen and the Camera recording lamp lights up.
Press REC START/STOP again to stop recording.

To turn the power off

Slide the POWER switch up to (CHG) OFF.

Tip

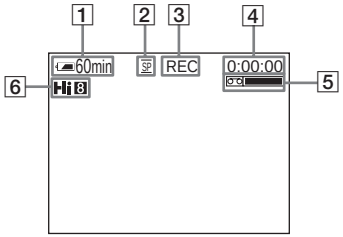
- If you do not use your camcorder for a long time, remove the cassette and store it.

➡*continued*

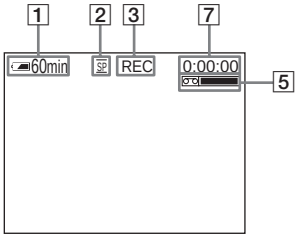
Indicators displayed during recording

The indicators will not be recorded on the tape.

For Hi8 TRV128/228/328/428:



For TRV260/265:
Date/time and camera settings data (p. 37) will not be displayed during recording.



1 **Remaining battery time**
The indicated time may not be correct depending on the environment of use. When you opened or closed the LCD panel, it takes about 1 minute to display the correct remaining battery time.

2 **Recording mode (SP or LP)**

3 **Recording status ([STBY] (standby) or [REC] (recording))**

4 **Tape counter (hour: minute: second)**
To set the counter to 0:00:00, press COUNTER RESET (p. 93).

5 **Recording capacity**
For Hi8 TRV128/228/328/428:
This appears after you insert a cassette and record for a while.
For TRV260/265:
This appears after a while when you set the POWER switch to CAMERA and insert a cassette.

6 **Hi8 format**
This appears while recording Hi8 format tapes.

7 **Time code/Tape counter (hour: minute: second)/Tape photo recording**

Notes

- Before changing the battery pack, slide the POWER switch up to (CHG) OFF.
- In the default setting, if you do not operate the camcorder for more than about 5 minutes, the power will automatically turn off to preserve battery power ([A.SHUT OFF], p. 59). To restart recording, slide the POWER switch down to select CAMERA, and then press REC START/STOP.

Tips

- To ensure smooth transition on a tape from the last recorded scene to the next, note the following.
  – Do not remove the cassette. (The picture will be recorded continuously without a break even when you turn the power off.)
  – Do not record pictures in SP mode and LP mode on the same tape.
  – Avoid stopping then recording a movie in the LP mode.
- For TRV260/265:
  The recording time, date, and the camera settings data are recorded automatically on the tape without being displayed on the screen. You can view this information during playback by selecting [DATA CODE] on the screen (p. 59).

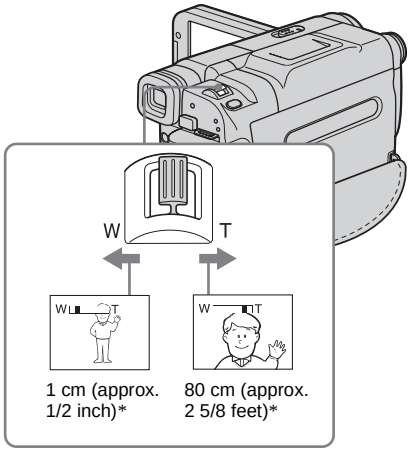
Recording for a longer time

To record for a longer time

In the (TAPE SET) menu, select [REC MODE], then [LP] (p. 54).
In the LP mode, you can record longer than when recording in the SP mode (2 times longer for Hi8 TRV128/228/328/428, 1.5 times longer for TRV260/265).
A tape recorded in the LP mode should be played back only on this camcorder.

Using zoom

When the CAMERA mode is selected, you can choose zoom to magnification levels greater than 20 times, and from that point activate the digital zoom ([D ZOOM], p. 47). Occasional use of the zoom is effective, but use it sparingly for best results.



* The minimum distance required between your camcorder and the subject to get a sharp focus in that position of the lever.

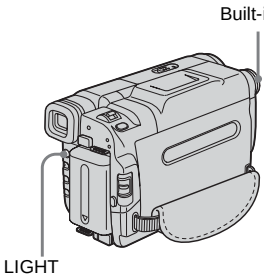
Move the power zoom lever slightly for a slower zoom. Move it further for a faster zoom.

To record wider range of view
Move the power zoom lever towards W. The subject appears farther away (Wide angle).

To record closer view
Move the power zoom lever towards T. The subject appears closer (Telephoto).

Using the built-in light

You can use the built-in light to suit your shooting situation. The recommended distance between the subject and camcorder is about 1.5 m (5 feet).



Press LIGHT repeatedly to select a setting.
The settings are displayed cyclically in the following order.

No indicator displayed: Always records without using the built-in light.
↓
AUTO : Automatically turns on and off according to the ambient brightness.
↓
ON : Always turns on.

To turn off the built-in light

Press LIGHT repeatedly until no indicator appears on the screen.

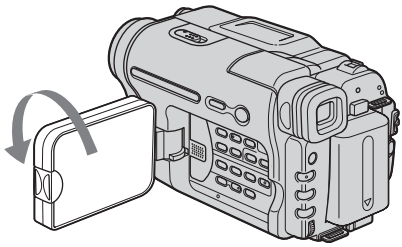
➡*continued*

Notes

- The built-in video light emits very bright light, which is perfectly safe in normal use. However, avoid directly aiming the light at a subject's eyes from very close range.
- The battery pack discharges quickly while the built-in light is turned on.
- When you do not use your camcorder, turn the built-in light off and remove the battery pack to avoid turning on the built-in light accidentally.
- When flickering occurs while shooting in the AUTO mode, press LIGHT until ON appears.
- The built-in light may turn on/off when you use the [PROGRAM AE] or back light function while shooting in the AUTO mode.
- For TRV260/265:
  The built-in light is turned off during the interval time of Interval recording.
- When you use the conversion lens (optional), light from the built-in light is blocked and may not illuminate the subject properly.

Recording in mirror mode

You can turn the LCD panel towards the subject so that you and your subject can share the image being recorded. You can also utilize this function when recording yourself, to keep the attention of small children attracted to the camcorder while you record them.



Open the LCD panel 90 degrees to the camcorder, then rotate it 180 degrees towards the subject.

A mirror-image of the subject appears on the LCD screen, but the picture will be normal when recorded.

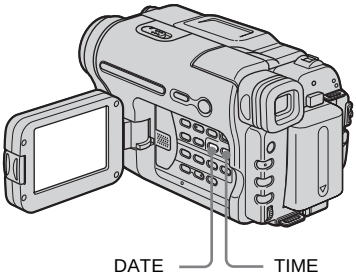
Notes

For Hi8 TRV128/228/328/428:

- appears in the viewfinder and on the LCD screen. ❚❚● appears in the standby mode, and ● appears in the recording mode. Some of other indicators appear mirror-reversed and others are not displayed.
- During recording in the mirror mode, DATE and TIME on your camcorder do not work.

Superimposing the date and time on pictures (Hi8 TRV128/228/328/428)

You can record the date and/or time displayed on the screen superimposed on the picture.



CCD-TRV428

Press DATE to record the date.
Press TIME to record the time.
Press DATE (or TIME), then press TIME (or DATE) to record the date and time.

To hide the date and time, press DATE and/or TIME again.

When you purchase your camcorder, the clock is not set up yet. Set the date and time to your local time before using (p. 17).

Note

- The date and time indicators recorded manually cannot be deleted.

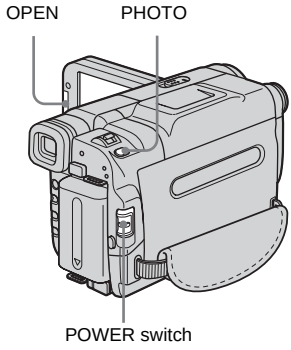
Tip

- If you do not record the date and time in the picture, record the date and time in the black screen as the background for about 10 seconds, then erase the date and time indicators before starting actual recording.

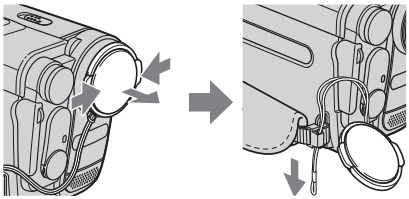
Recording still images

– Tape photo recording (TRV260/265)

You can record still images. Before recording, follow steps 1 to 7 in “Getting started” (p. 11 - p. 19).



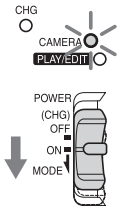
1 **Remove the lens cap. Pull the lens cap string down and attach it to the grip belt.**



2 **Press OPEN and open the LCD panel.**

➡*continued*

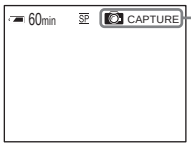
3 Slide the POWER switch to select the CAMERA mode.



Slide the POWER switch while pressing the green button.

4 Press and hold PHOTO lightly.

You will hear a small beep sound, and the picture will become a still image.
Recording does not start at this point.



The indicator appears.

5 Press PHOTO fully.

A shutter sound is heard, and the image is recorded with sound for 7 seconds.
The still image is displayed on the screen until recording is completed.

To turn the power off

Slide the POWER switch up to (CHG) OFF.

Note

- appears when the tape photo recording does not work.

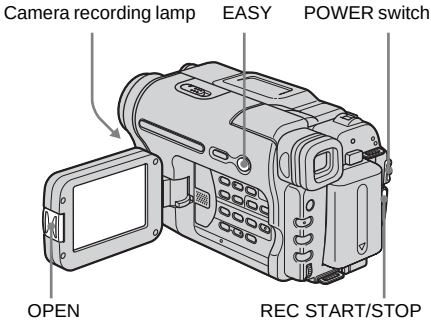
Tip

- You can record about 510 images in the SP mode and about 765 images in the LP mode on a tape which can record for 60 minutes in the SP mode.

Recording with ease

– Easy Handycam

With this Easy Handycam operation, most of the camera settings are set to automatic mode, only basic functions become available, and screen font size increases for easy viewing. Even first time users can enjoy easy recording. Before recording, follow steps 1 to 7 in “Getting started” (p. 11 - p. 19).



Tip

- Buttons that do not work during Easy Handycam operation have a dot beside them on your camcorder. Also, only menu items that are available during Easy Handycam operation are displayed when MENU is pressed.

1 Remove the lens cap. Pull the lens cap string down and attach it to the grip belt.

2 Press OPEN and open the LCD panel.

3 Slide the POWER switch to select the CAMERA mode.

You can record movies only.

4 Press EASY.

EASY lights up in blue.

Easy Handycam operation ON

5 **Press REC START/STOP.**

Recording starts. [REC] appears on the LCD screen and the Camera recording lamp lights up. Press REC START/STOP again to stop recording.

To turn the power off

Slide the POWER switch up to (CHG) OFF.

To cancel Easy Handycam operation

Press EASY again.

Notes

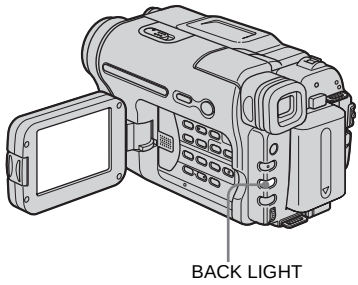
- You cannot switch from/to Easy Handycam operation during recording.
- For TRV260/265: During Easy Handycam operation, you cannot connect the USB cable to your camcorder.
- For TRV260/265: You cannot use Easy Handycam operation together with USB Streaming.
- All the settings return to their defaults during Easy Handycam operation. Previously made settings are restored when you cancel Easy Handycam operation.

Adjusting the exposure

The exposure is adjusted automatically in the default setting.

Adjusting the exposure for backlit subjects

When your subject has its back to the sun or other light, you can adjust the exposure to prevent the subject from becoming shadowed.



Press BACK LIGHT in CAMERA mode.

appears.

To cancel the back light function, press BACK LIGHT again.

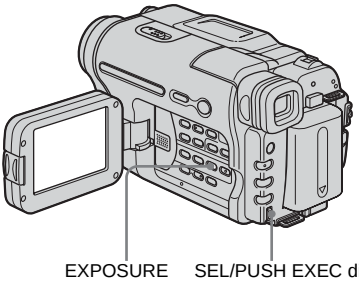
Note

- The back light function is canceled when you press EXPOSURE (p. 28).

➡*continued*

Adjusting the exposure manually

You can fix the brightness of a picture at the best exposure. When recording indoors on a clear day, for instance, you can avoid backlight shadows on people next to the window by manually fixing the exposure to that of the wall side of the room.



1 **Press EXPOSURE in CAMERA mode.**
The exposure indicator appears on the screen.

2 **Turn the SEL/PUSH EXEC dial to adjust the brightness.**

While exposure is set to manual mode, is displayed in the left-hand corner of the screen.

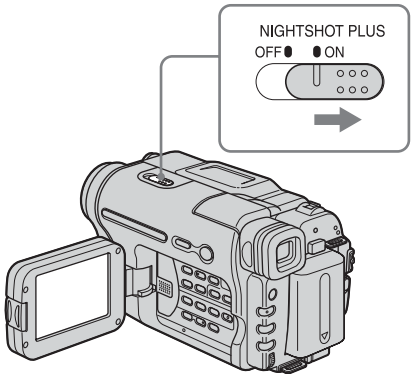
To return the setting to automatic exposure

Press EXPOSURE.

Recording in dark places

– NightShot plus

You can record subjects in dark places (such as when capturing the face of your baby sleeping) with this function.



Set the NIGHTSHOT PLUS switch to ON.
and ["NIGHTSHOT PLUS"] appear.
To cancel NightShot plus, set the NIGHTSHOT PLUS switch to OFF.

Notes

- Do not use the NightShot plus function in bright places. This may cause a malfunction.
- You cannot use the NightShot plus function together with:
  – [PROGRAM AE]
  – Manual exposure
- Adjust the focus manually when it is hard to focus automatically.
- Do not cover the infrared port with your fingers or other objects. Remove the conversion lens (optional) if it is attached.
- Depending on the shooting conditions or circumstances, colors may not be reproduced properly.

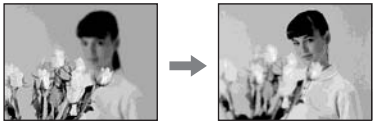
Tip

- If you record subjects in complete darkness, set [N.S. LIGHT] to [ON] in the menu settings. The maximum shooting distance using the NightShot Light is about 3 meters (10 feet). If you record subjects in dark places (such as night scene or in moonlight), set [N.S. LIGHT] to [OFF] in the menu settings. You can make image color deeper (p. 50).

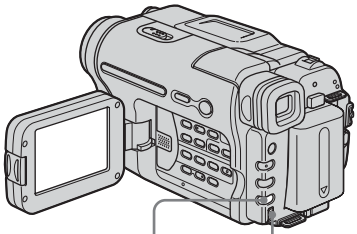
Adjusting the focus manually

The focus is adjusted automatically in the default setting.
You can adjust the focus manually according to the recording conditions.
Use this function in the following cases.

– To record a subject behind a window covered with raindrops.
– To record horizontal stripes.
– To record a subject with little contrast between the subject and its background.
– When you want to focus on a subject in the background.



– To record a stationary subject using a tripod.



1 **Press FOCUS in CAMERA mode.**
☞ appears.

2 **Turn the SEL/PUSH EXEC dial to sharpen focus.**
☞ changes to ▲ when the focus cannot be adjusted any further. ☞ changes to 👤 when the focus cannot be adjusted any closer.

➡*continued*

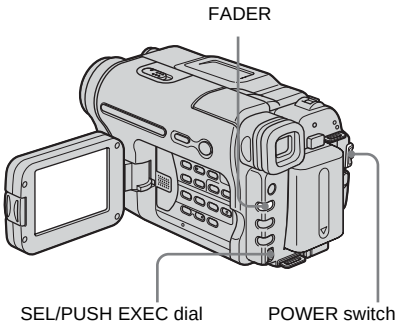
Tips for focusing manually

- It is easier to focus on the subject when you use the zoom function. Move the power zoom lever towards T (telephoto) to adjust the focus, and then, towards W (wide angle) to adjust the zoom for recording.
- When you want to record a close-up image of a subject, move the power zoom lever towards W (wide angle) to fully magnify the image, then adjust the focus.

To adjust the focus automatically

Press FOCUS again.

Recording a picture using various effects



Fading in and out of a scene – FADER

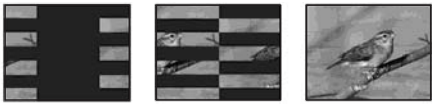
You can add the following effects to currently recording pictures.

[BLACK FADER]

[WHITE FADER]

[MOSAIC FADER]

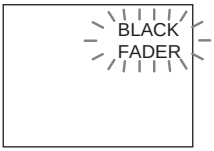
[STRIPE FADER]
This feature is for Hi8 TRV128/228/328/428 only.



[MONOTONE FADER]
When fading in, the picture gradually changes from black-and-white to color.
When fading out, the picture gradually changes from color to black-and-white.

1 **Slide the POWER switch to select the CAMERA mode.**

2 **Press FADER until the desired fader indicator flashes in the standby mode (to fade in) or during recording (to fade out).**



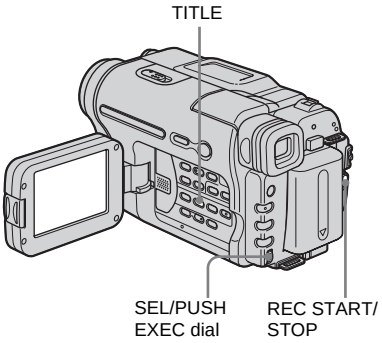
3 **Press REC START/STOP.**
The fader indicator stops flashing and disappears when the fade is complete.

To cancel the operation
In step 2, press FADER repeatedly until the indicator disappears.

Notes
- For TRV260/265:
  You cannot use the FADER function together with:
  – Tape photo recording
  – [FRAME REC] (Frame recording)
  – [INT. REC] (Interval recording)
- Titles do not fade in or fade out. The date and time indicator for Hi8 TRV128/228/328/428 also does not fade in or fade out.
  Erase them before operating the FADER function if they are not needed.

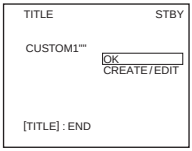
Superimposing a title

You can insert a title when recording.
You can select one of the 8 preset titles and the 2 custom titles.



1 **Slide the POWER switch to select the CAMERA mode, then press TITLE.**
Select a desired title from the displayed titles (2 original titles that you have created before and the preset titles that have been stored in your camcorder). You can create original titles (up to 2 types of title of within 20 characters each) in the following procedure.

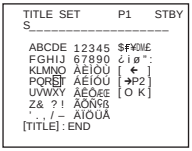
1 Turn the SEL/PUSH EXEC dial to select [CUSTOM1""] or [CUSTOM2""], then press the dial.



2 Turn the SEL/PUSH EXEC dial to select [CREATE/EDIT], then press the dial.
3 Turn the SEL/PUSH EXEC dial to select the column of the desired character, then press the dial.

➡*continued*

4 Turn the SEL/PUSH EXEC dial to select the desired character, then press the dial.



To erase a character: Select [←].
To enter a space: Select [Z& ? !], then select the blank part between & and ?.
To select alphabet and Russian characters: Select [→P2].

5 Turn the SEL/PUSH EXEC dial to select the next character, and enter the character in the same manner.

6 When you have finished entering characters, turn the SEL/PUSH EXEC dial to select [O K], then press the dial. The title is stored in memory.

2 Turn the SEL/PUSH EXEC dial to select the title you want to insert, then press the dial.

To insert an original title, turn the SEL/PUSH EXEC dial to select [CUSTOM1""] or [CUSTOM2""], and press the dial, then select [OK] and press the dial.

3 Change [COLOR], [SIZE], or [POSITION] as necessary.

1 Turn the SEL/PUSH EXEC dial to select [COLOR], [SIZE], or [POSITION], then press the dial. The selected item appears on the screen.

2 Turn the SEL/PUSH EXEC dial to select the desired item, then press the dial.

3 Repeat steps 1 and 2 until the title is laid out as desired.

[COLOR] (color)
[WHITE] ↔ [YELLOW] ↔ [VIOLET] ↔ [RED] ↔ [CYAN] ↔ [GREEN] ↔ [BLUE]

[SIZE] (size)
[SMALL] ↔ [LARGE]
(You can only select [SMALL] when you are entering more than 13 characters.)

[POSITION] (position)
You can select from 8 to 9 choices.

4 Turn the SEL/PUSH EXEC dial to select [OK], then press the dial.

The title appears.

5 Press REC START/STOP.

6 Press TITLE at the scene you want to erase the title off.

To superimpose the title while you are recording

Press TITLE and carry out steps 2 to 4. When you press the SEL/PUSH EXEC dial at step 4, the title is recorded.

Notes

- If you display the menu while superimposing a title, the title is not recorded while the menu is displayed.
- When you are selecting and setting the title, the title displayed on the screen is not recorded.
- When you superimpose a title while you are recording, the beep does not sound.
- When you are using your camcorder on the battery pack and do not operate it for 5 minutes, the power automatically goes off as the default setting. If you may take 5 minutes or longer to enter characters, set [A.SHUT OFF] in the ETC (OTHERS) menu to [NEVER] (p. 59). The power will not to be turn off. Even though the power goes off, the characters you have entered remain stored in memory. Turn the power back on, then start again from step 1 to continue superimposing the title.
- For Hi8 TRV128/228/328/428:
  The date and time, or either of them, may not be displayed depending on the size or position of the title.

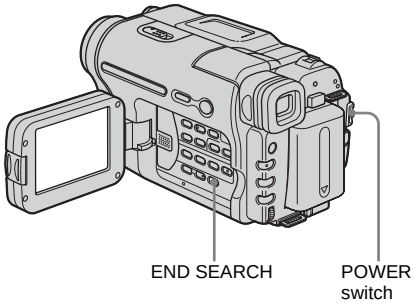
Tip

- To change a created title, select the title in step 1, then press the SEL/PUSH EXEC dial. Then reselect the characters again.

Searching for the last scene of the most recent recording

– END SEARCH

This function is handy when you have played back the tape, for example, but want to start recording right after the most recently recorded scene. The END SEARCH function will not work once you eject the cassette after you have recorded on the tape.



1 **Slide the POWER switch to select the CAMERA mode.**

2 **Press END SEARCH.**

The last scene of the most recent recording is played back for about 5 seconds, and the camcorder enters the standby mode at the point where the last recording has finished.

To cancel the operation

Press END SEARCH again.

Note

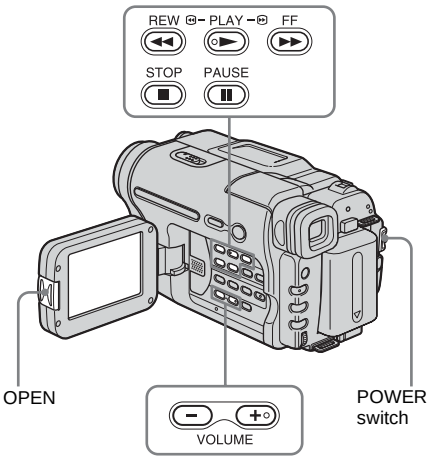
- The END SEARCH function will not work correctly when there is a blank section between recorded sections on the tape.

Tip

- When PLAY/EDIT mode is selected, you can do this operation by pressing END SEARCH.

Viewing pictures recorded on a tape

Make sure you have a recorded cassette inserted into your camcorder.
When you want to play back the recorded picture on your TV, see page 39.
For Hi8 TRV228/428/ TRV265:
You can control playback using the Remote Commander.

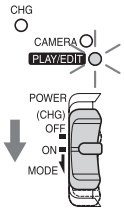


Tip

- Performing Easy Handycam operation, even first time users can play back easily. For details, see page 36.

1 Press OPEN and open the LCD panel.

2 Slide the POWER switch repeatedly to select the PLAY/EDIT mode.



Slide the POWER switch while pressing the green button.

3 Press (rewind) to go to the point you want to view.

4 Press (play) to start playback.

To adjust the volume

Press either of the two buttons on VOLUME.
When you close the LCD panel, sound is turned off.
(−):To turn the volume down
(+):To turn the volume up

To stop playback

Press (stop).

To pause

Press (pause) during playback. Press (pause) or (play) to restart the playback.
Playback stops automatically when pause mode continues for a few minutes.

To fast forward or rewind

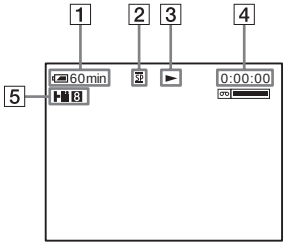
Press (fast forward) or (rewind) in stop mode.

To review movies on the viewfinder

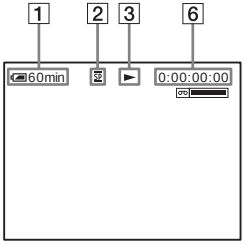
Close the LCD panel.

Indicators displayed during playing back

For Hi8 TRV128/228/328/428:



For TRV260/265:



1 **Remaining battery time**

2 **Recording mode (SP or LP)**

3 **Tape transport indicator**

4 **Tape counter (hour: minute: second)**

5 **Hi8 format**
This appears while playing back Hi8 format tapes.

6 **Time code (hour: minute: second: frame) or tape counter (hour: minute: second)**

Note

- For TRV260/265:
  If you use a standard 8 mm 8 tape, be sure to play back the tape on your camcorder. Mosaic noise may appear when you play back the standard 8 mm 8 tape on other camcorders (including another DCR-TRV260/TRV265).

Playing back in various modes

To fast forward or rewind during playback – Picture search

Keep on pressing ⏩ (fast forward) or ⏪ (rewind) during playback.
To resume normal playback, release the button.

To view the picture while fast forwarding or rewinding – Skip scan

Keep on pressing ⏩ (fast forward) or ⏪ (rewind) while fast forwarding or rewinding the tape.
To resume fast forwarding or rewinding, release the button.

To view pictures at slow speed (slow playback)*

For Hi8 TRV228/428/ TRV265:
Press SLOW ▮► on the Remote Commander during playback. To resume normal playback, press PLAY.

* For TRV265:
  Pictures output from the i.LINK DV Interface cannot be played back smoothly in the slow mode.

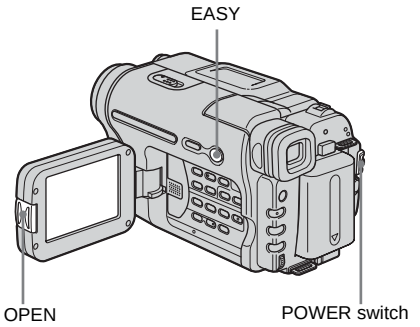
Notes

- For Hi8 TRV228/428:
  If slow playback lasts for about 1 minute, the camcorder automatically returns to normal speed playback.
- For Hi8 TRV128/228/328/428:
  When you play back a tape recorded in the LP mode, noise may appear on the LCD screen in the following cases:
  – Slow playback (Hi8 TRV228/428)
  – Playback pause
  – Picture search

Playing back with ease

– Easy Handycam

Easy Handycam operation allows easy playback for even first time users by providing only the basic functions for playback. Also screen font size increases for easy viewing. Make sure you have a recorded cassette inserted into your camcorder.



Tip

- Buttons that do not work during Easy Handycam operation have a dot beside them on your camcorder. Also, only menu items that are available during Easy Handycam operation are displayed when MENU is pressed.

1 **Press OPEN and open the LCD panel.**

2 **Slide the POWER switch repeatedly to select the PLAY/EDIT mode.**

3 **Press EASY.**

EASY lights up in blue.

4 **Play back a tape.**

The following buttons can be operated.
(play)/ (stop)/ (pause)/ (fast forward)/ (rewind)

For Hi8 TRV228/428/ TRV265:
You can operate those operations and SLOW on the Remote Commander.

To cancel Easy Handycam operation

Press EASY again.

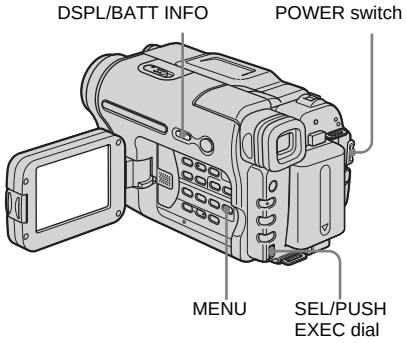
Notes

For TRV260/265:

- During Easy Handycam operation, you cannot connect the USB cable to your camcorder.
- You cannot use Easy Handycam operation together with USB Streaming.

Various playback functions

You can display the recorded date on the screen.



Displaying the screen indicators

You can choose to display the time code, tape counter, and other information on the screen.

Press DSPL/BATT INFO.

The indicators appear/disappear as you press the button.

Tips

- For Hi8 TRV228/428/ TRV265: You can display the screen indicators by pressing DISPLAY on the Remote Commander.
- You can display the screen indicators during playback on a TV. Select the ETC (OTHERS) menu, [DISPLAY], then [V-OUT/LCD] (p. 60).

Displaying the date/time and camera settings data – Data code (TRV260/265)

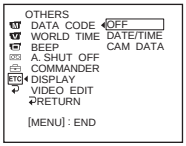
During playback, you can view the date/time data ([DATE/TIME]) and the camera settings data ([CAM DATA]) that are automatically recorded while recording pictures on a tape.

1 **Slide the POWER switch repeatedly to select the PLAY/EDIT mode.**

2 **Press MENU during playback or playback pause.**

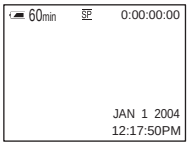
3 **Turn the SEL/PUSH EXEC dial to select ETC (OTHERS), then press the dial.**

4 **Turn the SEL/PUSH EXEC dial to select [DATA CODE], then press the dial.**



5 **Turn the SEL/PUSH EXEC dial to select the [DATE/TIME] or [CAM DATA], then press the dial.**

6 **Press MENU.**



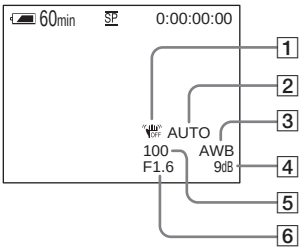
➡*continued*

To hide the date/time or the camera settings data

Follow steps 2 to 4, and select [OFF] in step 5.

Camera settings data display

In the date/time data display, the date and time is displayed in the same area.
If you record the picture without setting the clock, [--- -- ----] and [--:--:--] will appear.

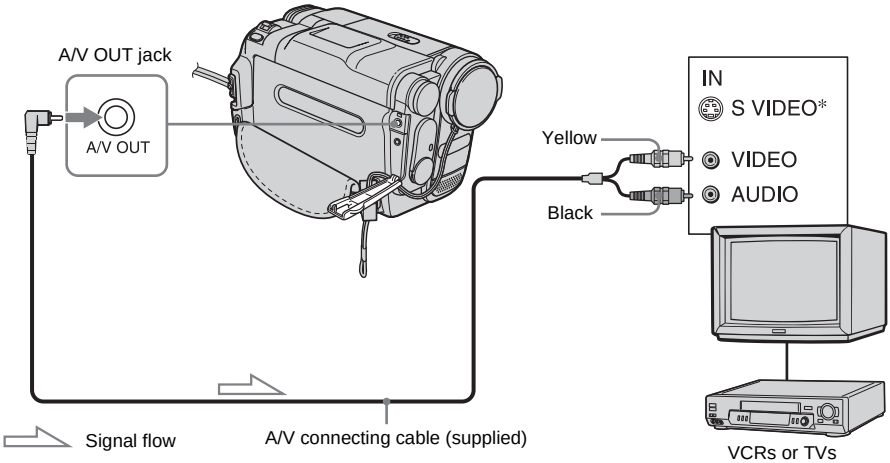


1 **SteadyShot off**
2 **Exposure**
3 **White balance**
4 **Gain**
5 **Shutter speed**
6 **Aperture value**

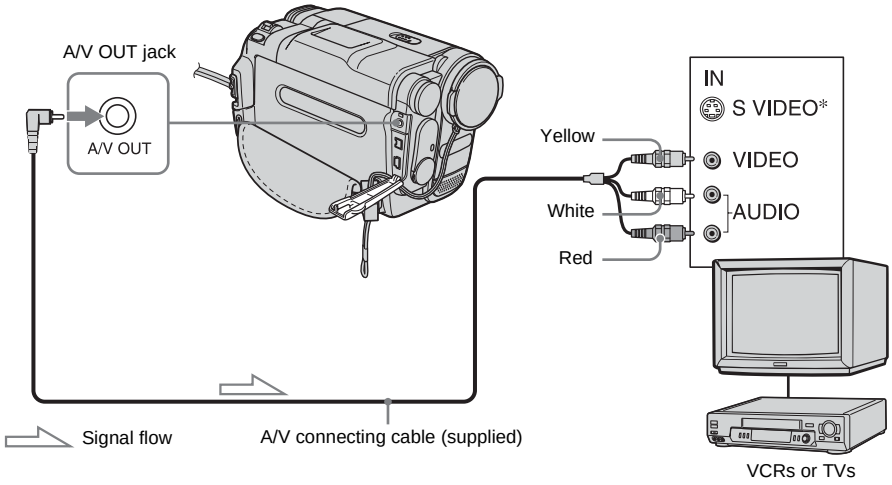
Playing the picture on a TV

Connect your camcorder to a TV using the supplied A/V connecting cable as shown in the following illustration.
Connect the supplied AC Adaptor to the wall outlet for the power supply (p. 12).
Refer also to the instruction manuals supplied with the devices to be connected.
To copy to another tape, see page 63.

For Hi8 TRV128/228/328/428:



For TRV260/265:



➡*continued*

* When there is an S video jack on the device to be connected, connect the S video plug to that jack instead of using the yellow video plug. The audio will not be output when you connect with the S video plug alone.
Pictures can be reproduced more faithfully with this connection.

When your TV is connected to a VCR

Connect your camcorder to the LINE IN input on the VCR using the A/V connecting cable. Set the input selector on the VCR to LINE.

To connect to a TV without audio/video input jacks

For Hi8 TRV128/228/328/428:
Use a NTSC system RFU adaptor (optional). Refer to the operating instructions of your TV and the RFU adaptor.

When your TV is stereo

For Hi8 TRV128/228/328/428:
Connect the audio plug of the A/V connecting cable to the left (white) input jack of your TV.

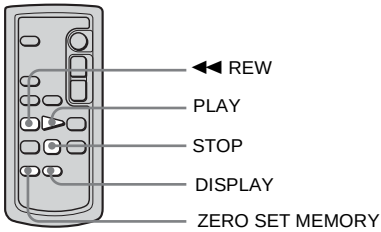
When your TV is monaural (When your TV has only one audio input jack)

For TRV260/265:
Connect the yellow plug of the A/V connecting cable to the video input jack and connect the white or the red plug to the audio input jack of your TV or VCR.
When you want to play the sound in monaural mode, use a connecting cable (optional) for that purpose.

Locating a scene on a tape for playback

(TRV265)

Searching quickly for a desired scene – Zero set memory



1 **During playback, press ZERO SET MEMORY on the Remote Commander at the point you want to locate later on.**

The tape counter is reset to “0:00:00” and →0← appears on the screen.
If the tape counter is not displayed, press DISPLAY on the Remote Commander.

2 **Press STOP when you want to stop playback.**

3 **Press ◀◀ REW.**

The tape stops automatically when the tape counter reaches “0:00:00.”

4 **Press PLAY.**

The playback starts from the point designated “0:00:00” on the tape counter.

To cancel the operation

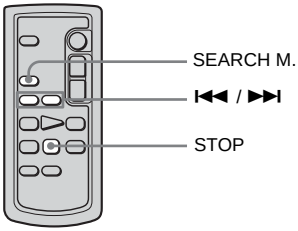
Press ZERO SET MEMORY on the Remote Commander again.

Notes

- There may be a discrepancy of several seconds between the time code and the tape counter.
- Zero set memory will not function correctly if there is a blank section between recorded sections on the tape.

Searching for a scene by date of recording – Date search

You can locate the point where the recording date changes.



1 **Slide the POWER switch repeatedly to select the PLAY/EDIT mode.**

2 **Press SEARCH M. on the Remote Commander repeatedly to select [DATE SEARCH].**

3 **Press I◄◄ (previous)/►►I (next) on the Remote Commander to select a recording date.**

Playback starts automatically from the point where the date changes.
Each time you press the button, the previous or the next date will be searched for and displayed.

To cancel the operation

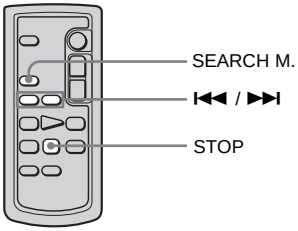
Press STOP on the Remote Commander.

Notes

- If one day's recording is less than 2 minutes, your camcorder may not accurately find the point where the recording date changes.
- The Date search will not function correctly when there is a blank section between recorded sections on the tape.

Searching for a still image – Photo search

You can locate the still image you have recorded on a tape.



1 **Slide the POWER switch repeatedly to select the PLAY/EDIT mode.**

2 **Press SEARCH M. on the Remote Commander repeatedly to select [PHOTO SEARCH].**

3 **Press I◄◄ (previous)/►►I (next) on the Remote Commander to select the photo for playback.**

Playback of the photo starts automatically.
Each time you press the button, the previous or the next photo will be searched for and displayed.

To cancel the operation

Press STOP on the Remote Commander.

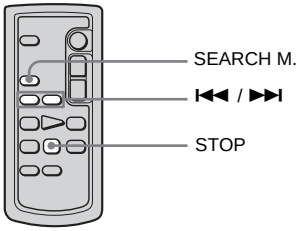
Note

- If a tape has a blank section between recorded sections, the Photo search function may not work correctly.

➡*continued*

Playing back still images in sequence – Photo scan

You can also locate still images one after another and display each image for 5 seconds automatically.



1 **Slide the POWER switch repeatedly to select the PLAY/EDIT mode.**

2 **Press SEARCH M. on the Remote Commander repeatedly to select [PHOTO SCAN].**

3 **Press I◄◄ (previous)/►►I (next) on the Remote Commander.**
Each photo will be played back for about 5 seconds.

To cancel the operation

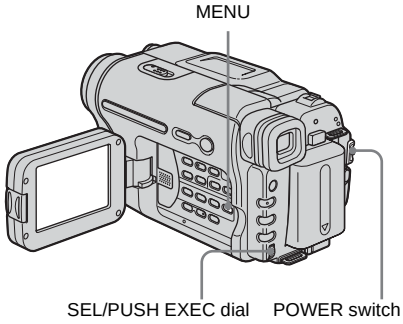
Press STOP on the Remote Commander.

Note

- If a tape has a blank section between recorded sections, the Photo scan function may not work correctly.

Changing the menu settings

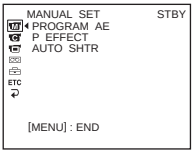
You can change various settings or make detailed adjustments using the menu items displayed on the screen.



1 Turn on the power (p. 15).

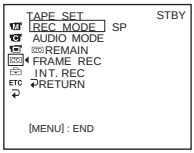
2 Press MENU.

The menu screen appears.



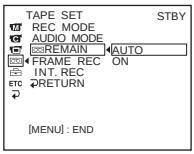
3 Turn the SEL/PUSH EXEC dial to select desired menu, then press the dial.

- MANUAL SET (p. 44)
- CAMERA SET (p. 47)
- PLAYER SET (p. 51) (Hi8 TRV128/228/328/428)
- VCR SET (p. 51) (TRV260/265)
- LCD SET (p. 53)
- TAPE SET (p. 54)
- SETUP MENU (p. 57)
- OTHERS (p. 59)

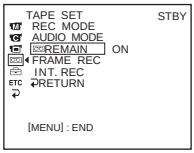


4 Turn the SEL/PUSH EXEC dial to select the desired item, then press the dial.

The available menu items vary depending on the position of the POWER switch. Unavailable items will be grayed out.



5 Turn the SEL/PUSH EXEC dial to select the desired mode, then press the dial.



6 Press MENU to hide the menu screen.

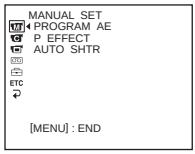
If you want to change other items, select [RETURN] and press the dial, then repeat steps from 3 to 5.

Using the M (MANUAL SET) menu

– PROGRAM AE/P EFFECT, etc.

You can select items listed below in the MANUAL SET menu. To select these items, see “Changing the menu settings” (p. 43).

The default settings are marked with ▷. The settings you can adjust vary depending on the power mode of your camcorder. The screen shows the items you can operate at the moment. Unavailable items will be grayed out.



PROGRAM AE

You can record pictures easily in a situation that requires various techniques by selecting the following settings.

▷ AUTO	Select this when not using PROGRAM AE.	
SPOTLIGHT* (spotlight)	Select to prevent people’s faces from appearing excessively white when subjects are lit by strong light, such as in a theater or at a wedding.	
PORTRAIT (soft portrait)	Select to bring out the subject such as people or flowers while creating a soft background.	
SPORTS* (sports lesson)	Select to minimize shake when shooting fast-moving subjects such as in tennis or golf.	
BEACH&SKI* (beach & ski)	Select to prevent people’s faces from appearing dark in strong light or reflected light, such as at a beach in midsummer or on a ski slope.	
SUNSETMOON** (sunset & moon)	Select to maintain the atmosphere of situations such as sunsets, general night views, fireworks, and neon signs.	
LANDSCAPE** (landscape)	Select when shooting distant subjects such as mountains. This setting also prevents your camcorder from focusing on glass or metal mesh in windows that comes in between the camcorder and the subject.	

* Your camcorder is adjusted to focus only on subjects in the middle to far distance.

**Your camcorder is adjusted to focus only on distant subjects.

Note

- When you set the NIGHTSHOT PLUS switch to ON, [PROGRAM AE] does not work. (The indicator flashes.)

P EFFECT

For Hi8 TRV128/228/328/428:
You can add special effects (such as films) to a picture before recording.
P✦ appears when each effect is selected.
For DV TRV260/265:
You can add special effects (such as films) to a picture before or after recording.
P✦ appears when each effect is selected.

▷OFF	Select when not using the Picture effect setting.	
NEG.ART	Select to record/play the picture with the color and brightness of the picture reversed.	
SEPIA	Select to record/play the picture appearing in sepia.	
B&W	Select to record/play the picture appearing in monochrome (black-and-white).	
SOLARIZE	Select to record/play the picture looking like an illustration with strong contrast.	
SLIM	Select to record the picture appearing vertically expanded. (This effect is not available during playback.)	
STRETCH	Select to record the picture appearing horizontally expanded. (This effect is not available during playback.)	
PASTEL	Select to record the picture looking like a pale pastel drawing. (This effect is not available during playback.)	
MOSAIC	Select to record the picture appearing mosaic-patterned. (This effect is not available during playback.)	

Note

- For DV TRV260/265:
  You cannot add effects to externally input pictures. Also, you cannot output pictures edited with Picture effects via the i.LINK DV Interface.

➡*continued*

Tip

• You can copy pictures edited using picture effects to another tape (p. 63).

AUTO SHTR

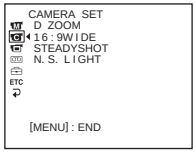
▷ON	Select to automatically activate the electronic shutter to adjust the shutter speed when recording in bright conditions.
OFF	Select when recording without using the electronic shutter.

Using the (CAMERA SET) menu

– 16:9 WIDE/STEADYSHOT, etc.

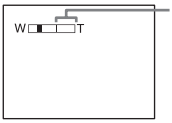
You can select items listed below in the CAMERA SET menu. To select these items, see “Changing the menu settings” (p. 43).

The default settings are marked with ▷. The settings you can adjust vary depending on the power mode of your camcorder. The screen shows the items you can operate at the moment. Unavailable items will be grayed out.



D ZOOM

You can select the maximum zoom level in case you want to zoom to a level greater than 20 times while recording on a tape. Note that the image quality decreases when you are using the digital zoom. This function is useful when recording enlarged pictures of a distant subject, such as a bird.



The right side of the bar shows the digital zooming zone.
The zooming zone appears when you select the zooming level.

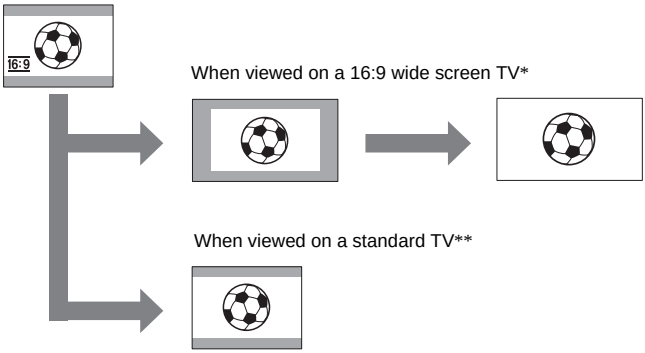
▷OFF	Select to deactivate the digital zoom. Up to 20 times zoom is performed optically.
40 ×	Select to activate the digital zoom. 20 times through 40 times zoom is performed digitally.
990 ×	Select to activate the digital zoom. 20 times through 990 times zoom is performed digitally.

➡*continued*

16:9 WIDE

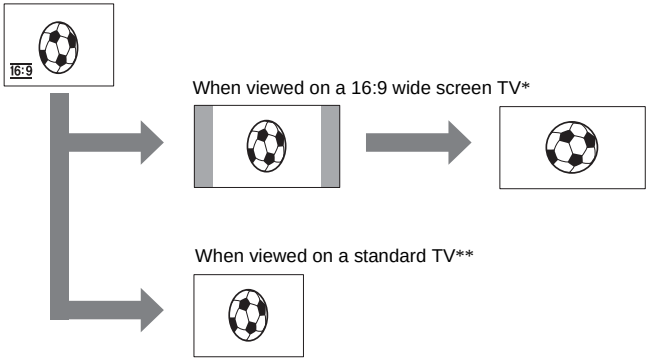
For Hi8 TRV128/228/328/428:
You can record a cinema-like picture ([CINEMA] mode) or a 16:9 wide picture ([16:9 FULL] mode) to watch on the 16:9 wide-screen TV.
Refer also to the manuals supplied with your TV.
In [CINEMA] mode

When viewed on the LCD screen/viewfinder



In [16:9 FULL] mode

When viewed on the LCD screen/viewfinder



* Picture appears in full screen when the wide-screen TV switches to full mode.
**Played in 4:3 mode. When you play a picture in the wide mode, it appears as you have seen on the LCD screen or in the viewfinder.

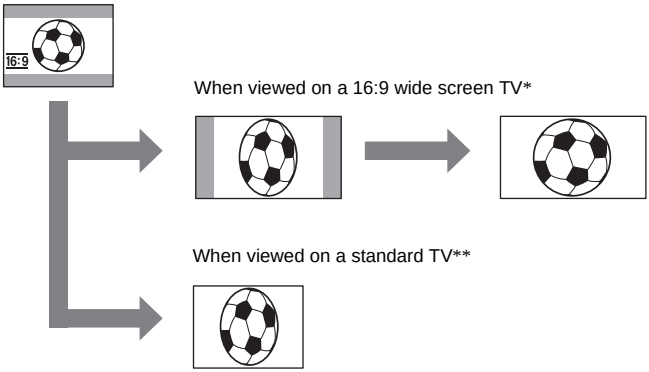
▷OFF	Standard setting (to record pictures to play back on a 4:3 TV). The recorded picture will not be wide.
CINEMA (16:9)	Select to record a picture to be played back in CINEMA mode.
16:9 FULL (16:9)	Select to record a picture to be played back on a 16:9 wide TV.

Tips

- The ID-1 system sends aspect ratio information (16:9, 4:3, or letter box) by inserting signals between video signals.
- When you record in the [16:9 FULL], the date or time indicator will be widened on wide-screen TVs.
- For Hi8 TRV328/428:
  The SteadyShot does not work. If you set [16:9 FULL] in the menu settings when the SteadyShot is working, ✋ flashes and the SteadyShot does not function.

For TRV260/265:
You can record a 16:9 wide picture on the tape to watch on a 16:9 wide-screen TV ([16:9 WIDE] mode).
With this function [ON], your camcorder offers even wider angles when you move the power zoom lever to the "W" side than recording in [OFF].
When you connect your camcorder to the S video input jack of a TV compatible with the ID-1/ID-2 system and play the tape, the TV switches to full mode automatically.
Refer also to the manuals supplied with your TV.

When viewed on the LCD screen



* Picture appears in full screen when the wide-screen TV switches to full mode.
**In 4:3 mode. When you play a picture in the wide mode, it appears as you have seen on the LCD screen.

▷OFF	Standard setting (to record pictures to play back on a 4:3 TV). The recorded picture will not be wide.
ON (16:9)	Select to record a picture to be played back on a 16:9 wide TV. The recorded picture will be played in full mode when you connect to your TV using an S (S1) video input jack compatible with ID-1/ID-2 systems.

Tips

- The ID-1 system sends aspect ratio information (16:9, 4:3, or letter box) by inserting signals between video signals.
- The ID-2 system sends a copyright protection signal with the ID-1 signals inserted between video signals in an analog connection.
- S1 video sends information with the standard S video signal to select wide mode automatically.
- The SteadyShot does not work. If you set [16:9 WIDE] to [ON] in the menu settings when the SteadyShot is working ✋ flashes and the SteadyShot does not function.

➡*continued*

STEADYSHOT

For Hi8 TRV328/428/ TRV260/265:
You can select this function to compensate for camera-shake.

▷ON	Standard setting (enable the SteadyShot function). If you select a function that STEADYSHOT cannot work with, appears.
OFF ( )	Select to deactivate the SteadyShot function. Select to shoot a stationary subject with a tripod, or when using a conversion lens (optional). Natural pictures are produced.

Note

- For TRV260/265:
  Camera-shake cannot be completely compensated for in the following cases:
  – When recording in a dark place
  – When recording a subject with little contrast to the background
  – When recording horizontal stripes
  – When using the zoom
  – When recording a fast moving subject
  – When the zoom position is set to the W-end side

N.S. LIGHT

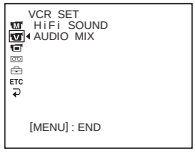
When using the NightShot plus function to record, you can record clearer pictures by using the NightShot Light to emit infrared rays (invisible).

▷ON	Select to use the NightShot Light. (p. 28)
OFF	Select to disable the NightShot Light. (p. 28)

Using the (PLAYER SET)/ (VCR SET) menu – HiFi SOUND/EDIT, etc.

You can select the items listed below in the menu (the PLAYER SET menu for Hi8 TRV128/228/328/428, the VCR SET menu for TRV260/265.) To select these items, see "Changing the menu settings" (p. 43).

The default settings are marked with ▷. The settings you can adjust vary depending on the power mode of your camcorder. The screen shows the items you can operate at the moment. Unavailable items will be grayed out.



HiFi SOUND

For TRV260/265:

You can select how to play back audio recorded on a tape in stereo mode.

▷STEREO	Select to play back a stereo tape or dual sound track tape with main and sub sound.
1	Select to play back a stereo tape with the left channel sound or a dual sound track tape with main sound.
2	Select to play back a stereo tape with the right channel sound or a dual sound track tape with sub sound.

Notes

- You can playback a dual sound track cassette on this camcorder. However, you cannot record a dual sound track on this camcorder.
- The setting returns to [STEREO] when you disconnect the power source from your camcorder for more than 5 minutes.

EDIT

For Hi8 TRV128/228/328/428:

Picture degradation is minimized when you dub or edit a tape using the camcorder as the playback device.

▷OFF	Select this for no compensation.
ON	Select to minimize picture degradation.

Note

- The setting returns to [OFF] when you disconnect the power source from your camcorder for more than 5 minutes.

➡*continued*

TBC

For Hi8 TRV128/228/328/428:

▷ON	Select to correct jitter (horizontal picture shake during playback).
OFF	Select to not compensate picture distortion when playing back a tape on which you have dubbed repeatedly or recorded TV game signals.

DNR

For Hi8 TRV128/228/328/428:

▷ON	Select to eliminate color noise in the picture.
OFF	Select to minimize picture artifacts in a picture containing lots of movement.

AUDIO MIX

For TRV260/265:
You can adjust the audio balance between ST1 (the originally recorded sound) and ST2.

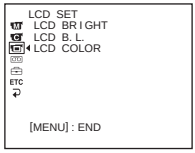
Notes

- You cannot adjust sound recorded in 16 bit audio mode.
- Only the originally recorded sound will be heard when you disconnect the power source from your camcorder for more than 5 minutes.

Using the (LCD SET) menu – LCD B.L./LCD COLOR, etc.

You can select the items listed below in the LCD SET menu. To select these items, see "Changing the menu settings" (p. 43).

The default settings are marked with ▷. The settings you can adjust vary depending on the power mode of your camcorder. The screen shows the items you can operate at the moment. Unavailable items will be grayed out.



LCD BRIGHT

See page 16 for details.

LCD B.L.

You can adjust the brightness of the LCD screen's backlight. The recorded picture will not be affected by this setting.

▷BRT NORMAL	Standard brightness.
BRIGHT	Select to brighten the LCD screen.

Notes

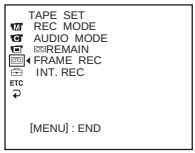
- When you connect your camcorder to outside power sources, [BRIGHT] is automatically selected for the setting.
- When you select [BRIGHT], battery life is reduced by about 10 percent during recording.

LCD COLOR

Turn the SEL/PUSH EXEC dial to adjust the color on the LCD screen. The recorded picture will not be affected by this setting.

Using the (TAPE SET) menu – FRAME REC/ INT.REC, etc.

You can select items listed below in the TAPE SET menu. To select items, see “Changing the menu settings” (p. 43).
The default settings are marked with ▷. The settings you can adjust vary depending on the power mode of your camcorder. The screen shows the items you can operate at the moment. Unavailable items will be grayed out.



REC MODE

▷SP (SP)	Select to record in the SP (Standard Play) mode on a cassette.
LP (LP)	Select to increase the recording time from that of the SP mode (2 times longer for Hi8 TRV128/228/328/428, 1.5 times longer for TRV260/265) (Long Play). The use of Sony cassettes is recommended to get the most out of your camcorder.

Notes

- If you record in the LP mode, a mosaic-like noise may appear or sound may be interrupted when you play back the tape on other camcorders or VCRs.
- For Hi8 TRV128/228/328/428:
  When you record a tape in the LP mode on your camcorder, recording is carried out in the standard 8 mm 8 system.
- For TRV260/265:
  When you mix recordings in the SP mode and in the LP mode on one tape, the playback picture may be distorted or the time code may not be written properly between the scenes.

AUDIO MODE

For TRV260/265:

▷12BIT	Select to record in the 12-bit mode (2 stereo sounds).
16BIT (♪16b)	Select to record in the 16-bit mode (1 stereo sound with high quality).

ORC TO SET

For Hi8 TRV128/228/328/428:
You can automatically adjust the recording condition to get the best possible recording.
When you select [ORC TO SET] in the menu settings, [START/STOP KEY] appears. Press REC START/STOP. [ORC] appears on the screen and adjustment starts. Your camcorder returns to the standby mode when adjustment is complete. It takes about 10 seconds for adjustment.

Notes

- Each time you eject a cassette, this setting will be canceled.

- When you set [ORC TO SET], a non-recorded section of about 0.1 second appears on the tape. However, note that this non-recorded section disappears from the tape when you continue recording from this section.
- To check if you have already set this setting, select [ORC TO SET] in the menu settings. [ORC ON] is displayed if it is already set.

REMAIN

▷AUTO	Select to display the remaining tape bar: • For about 8 seconds after you turn on your camcorder with the cassette inserted, and your camcorder calculates the remaining amount of tape. • For about 8 seconds after (play) is pressed. • For about 8 seconds after DSPL/BATT INFO is pressed to display the screen indicators. • For the period of tape rewinding, forwarding or picture search.
ON	Select to always display the remaining tape indicator.

FRAME REC

For TRV260/265:
You can record pictures with a stop-motion animated effect by alternately frame recording and then moving the subject a little.
For TRV265:
Operate your camcorder using the Remote Commander to prevent camera shake.

▷OFF	Select to record in the standard recording mode.
ON	Select to record pictures using the frame recording function. **1 Turn the SEL/PUSH EXEC dial to select [ON], then press the dial.** **2 Press MENU to hide the menu settings.** lights up. **3 Press REC START/STOP.** A picture (approximately 6 frames) is recorded, and your camcorder enters the standby mode. **4 Move the subject and repeat step 3.**

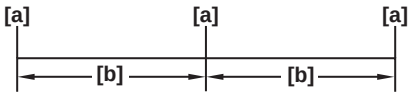
Notes

- When you use frame recording continuously, the remaining tape time will not be indicated correctly.
- The last scene will be longer than other scenes.

➡*continued*

INT.REC

For TRV260/265:
You can achieve excellent recordings of flowers blooming, etc., with this function. Connect your camcorder to the wall outlet using the supplied AC Adaptor during the operation.



a. [REC TIME]
b. [INTERVAL]

1 **Turn the SEL/PUSH EXEC dial to select [SET], then press the dial.**

2 **Turn the SEL/PUSH EXEC dial to select [INTERVAL], then press the dial.**

3 **Turn the SEL/PUSH EXEC dial to select the desired interval time (30 seconds, 1, 5, 10 minutes), then press the dial.**

4 **Turn the SEL/PUSH EXEC dial to select [REC TIME], then press the dial.**

5 **Turn the SEL/PUSH EXEC dial to select the desired recording time (0.5, 1, 1.5, 2 seconds), then press the dial.**

6 **Turn the SEL/PUSH EXEC dial to select [RETURN], then press the dial.**

7 **Turn the SEL/PUSH EXEC dial to select [ON], then press the dial.**

8 **Press MENU to hide the menu settings.**
flashes.

9 **Press REC START/STOP.**
The interval recording starts.
lights up during interval recording.
To cancel recording, set to [OFF] in the menu settings.

Note

- There may be a discrepancy in recording time of up to ± 6 frames from the selected time.

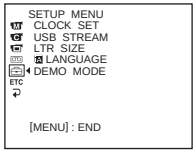
Tips

- If you adjust the focus manually, you may be able to record clear pictures even if the light changes (p. 29).
- You can silence the beeps during recording (p. 59).

Using the (SETUP MENU) – CLOCK SET/USB STREAM/ LANGUAGE, etc.

You can select items listed below in the SETUP MENU. To select items, see "Changing the menu settings" (p. 43).

The default settings are marked with ▷. The settings you can adjust vary depending on the power mode of your camcorder. The screen shows the items you can operate at the moment. Unavailable items will be grayed out.



CLOCK SET

You can set the date and time (p. 17).

AUTO DATE

For Hi8 TRV128/228/328/428:
You can automatically record the date once a day for 10 seconds after you start recording.

▷ON	Select to record the date for 10 seconds after recording has started.
OFF	Select to cancel the auto date function.

Tip

- The auto date function automatically displays the date once a day. However, the date may automatically appear more than once a day if:
  – you set the date and time.
  – you eject and insert the tape again.
  – you stop recording within 10 seconds.
  – you set [AUTO DATE] to [OFF] once and set it back to [ON] in the menu settings.

USB STREAM

For TRV260/265:
You can connect a USB cable (supplied) to your camcorder, and view the picture displayed on the screen of your camcorder on your computer (USB Streaming). For details, refer to the "Computer Applications Guide."

▷OFF	Select to deactivate the USB Streaming function.
ON	Select to activate the USB Streaming function.

LTR SIZE

▷NORMAL	Select to display selected menu items in normal size.
2×	Select to display selected menu items at twice the normal height.

➡*continued*

LANGUAGE

You can select or change the language used for the on-screen display (p. 19). You can select from English, Simplified English, Canadian-French, Latin American Spanish, Brazilian-Portuguese, Traditional-Chinese, or Korean.

DEMO MODE

When you remove a cassette from your camcorder, and select the CAMERA mode, you can view the demonstration in about 10 minutes.

▷ON	Select to see an overview of the functions available such as when you are using this camcorder for the first time.
OFF	Select when you do not intend to use the [DEMO MODE].

Note

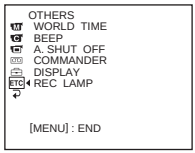
- You can view the demonstration only when the NIGHTSHOT PLUS switch is set to OFF.

Tips

- The demonstration will be suspended in situations such as those described below.
  – When a cassette is inserted.
  – When a mode other than CAMERA is selected.
- If [A.SHUT OFF] is set to [5 min] when the camcorder is used on the battery pack, the power will be turned off after approximately 5 minutes (p. 59).

Using the ETC (OTHERS) menu – WORLD TIME/VIDEO EDIT, etc.

You can select items listed below in the OTHERS menu. To select items, see "Changing the menu settings" (p. 43).
The default settings are marked with ▷. The settings you can adjust vary depending on the power mode of your camcorder. The screen shows the items you can operate at the moment. Unavailable items will be grayed out.



DATA CODE

For TRV260/265:

▷OFF	Select not to display date, time and the camera settings data during playback.
DATE/TIME	Select to display the date and time during playback. (p. 37)
CAM DATA	Select to display the camera setting data during playback. (p. 37)

WORLD TIME

You can adjust the time difference when using your camcorder abroad. Set the time difference by turning the SEL/PUSH EXEC dial, the clock will be adjusted in accordance with the time difference. If you set the time difference to 0, the clock returns to the originally set time.

BEEP

▷MELODY	Select to play a melody when you start/stop recording, operate your camcorder with the SEL/PUSH EXEC dial, or when an unusual condition occurs on your camcorder.
NORMAL	Select to sound a beep instead of the melody.
OFF	Select to cancel the melody, beep sound, shutter sound and operation confirmation beep.

A.SHUT OFF

▷5 min	Select to activate the Auto shut off. When approximately 5 minutes have elapsed while you do not operate your camcorder, the camcorder is automatically turned off to prevent the battery from becoming consumed.
NEVER	Select to deactivate the Auto shut off.

➡*continued*

Note

- When you connect your camcorder to the wall outlet, [A.SHUT OFF] is automatically set to [NEVER].

COMMANDER

For Hi8 TRV228/428/ TRV265:

▷ON	Select when using the Remote Commander supplied with your camcorder.
OFF	Select to deactivate the Remote Commander to prevent your camcorder from responding to a command sent by another VCR remote control unit.

Note

- The setting returns to [ON] when you have the power source disconnected from your camcorder for more than 5 minutes.

DISPLAY

▷LCD	Select to show the displays such as the time code on the LCD screen and in the viewfinder.
V-OUT/LCD	Select to show the displays such as the time code on the TV screen, LCD screen, and in the viewfinder.

REC LAMP

▷ON	Select to turn on the camera recording lamp on the front of your camcorder during recording.
OFF	Select this setting in the following recording situations. The camera recording lamp will not light up during recording. • When you do not want the subject to be nervous about being recorded. • When you are recording close to the subject. • When the subject reflects the recording lamp.

VIDEO EDIT

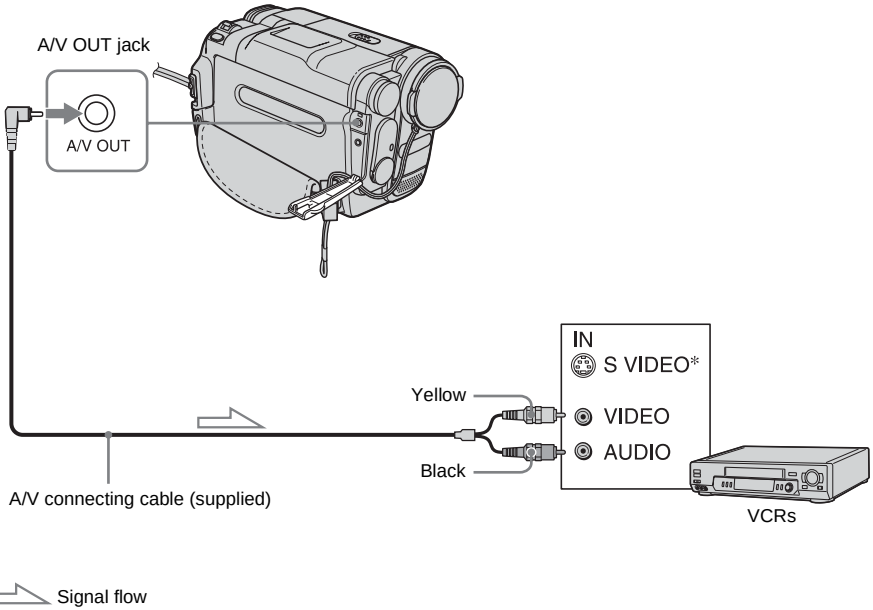
For TRV260/265:

You can select up to 20 scenes (programs) and record them in the desired order to another recording device such as VCR (p. 69).

Connecting to a VCR

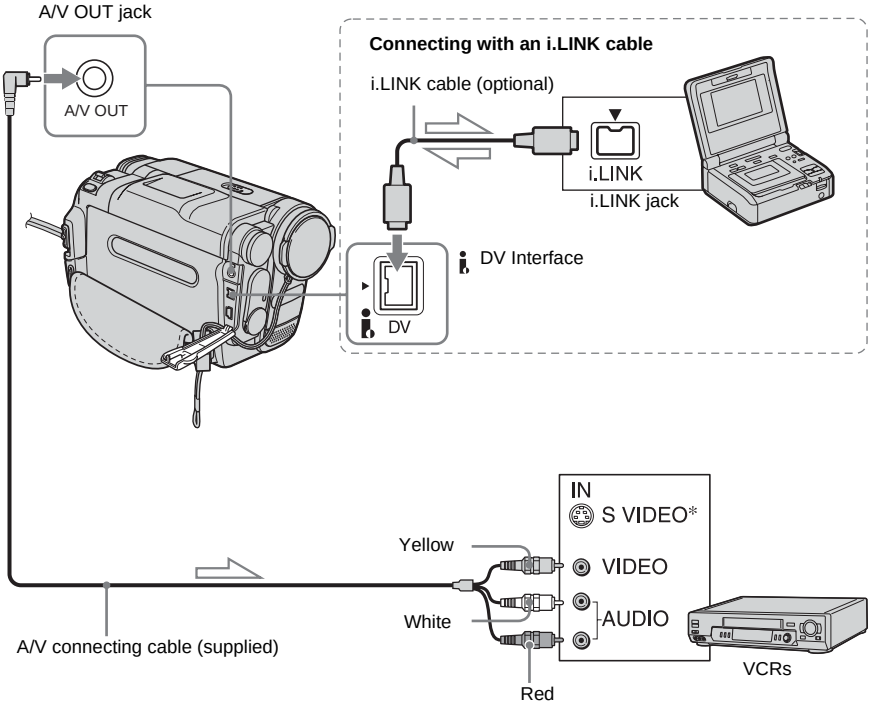
You can create a copy of the picture recorded on your camcorder on other recording devices (p. 63).
For TRV260/265, you can also record the picture from a VCR to a tape on your camcorder (p. 68).
Connect your camcorder to a VCR as shown in the following illustration.

For Hi8 TRV128/228/328/428:



➡*continued*

For TRV260/265:



* When there is an S video jack on the device to be connected, connect the S video plug to that jack instead of using the yellow video plug. The audio will not be output when you connect with the S video plug alone.
Pictures can be reproduced more faithfully with this connection.

Notes on the A/V connecting cable

- Use the A/V connecting cable to connect your camcorder to other devices. Before connecting, make sure the [DISPLAY] setting in the ETC (OTHERS) menu is set to [LCD] (the default setting) (p. 60).
- For Hi8 TRV128/228/328/428:
  When you are connecting your camcorder to stereo device, connect the audio plug of the A/V connecting cable to the left (white) jack on the VCR.
- For TRV260/265:
  When you are connecting your camcorder to monaural device, connect the yellow plug of the A/V connecting cable to the video jack, and the red or the white plug to the audio jack on the VCR.

To use an i.LINK cable for connection

For TRV260/265:
Use an i.LINK cable (optional) to connect your camcorder to other device via the DV Interface. The video and sound signals are transmitted digitally, producing high quality pictures. Note that you cannot record the picture and sound separately. For details, see page 84.

Dubbing to another tape

You can copy and edit the picture played back on your camcorder to other recording devices (such as VCRs).

1 Connect your VCR to your camcorder as a recording device (p. 61, 62).

2 Prepare your VCR for recording.

- Insert a cassette for recording.
- If your VCR has an input selector, set it to the input mode.

3 Prepare your camcorder for playback.

- Insert the recorded cassette.
- Slide the POWER switch to select the PLAY/EDIT mode.

4 Start the playback on your camcorder, and record it on the VCR.

Refer to the operating instructions supplied with your VCR for details.

5 When the dubbing is finished, stop your camcorder and the VCR.

Notes

- When dubbing using the A/V connecting cable, press DSPL/BATT INFO to hide indicators such as time code (p. 37). Otherwise, they will be recorded on the tape.
- For TRV260/265:
  When connected using the A/V connecting cable, to record the date/time and camera settings data, have it displayed on screen (p. 37).
- For TRV260/265:
  When your camcorder is connected to the VCR via the i DV Interface, you cannot record the title or indicators.
- For TRV260/265:
  Pictures edited with Picture effect ([P EFFECT] p. 45) cannot be output via the i DV Interface.
- For TRV260/265:
  When connected using the i.LINK cable, the recorded picture becomes rough when a picture is paused on your camcorder while recording to a VCR.

Tip

- For Hi8 TRV128/228/328/428:
  To prevent deterioration of pictures, set [EDIT] to [ON] in the (PLAYER SET) menu before dubbing (p. 51).

Dubbing a tape easily

– Easy Dubbing (Hi8 TRV128/228/328/428)

You can control VCR for dubbing with your camcorder easily with the VCR connected to the camcorder.

Step 1: Preparing your camcorder and VCR for operation

Follow the steps below when you are performing the Easy Dubbing for the first time. You can skip this setting if you have set up the VCR by the following procedure before.

Note

- You cannot perform the Easy Dubbing on a VCR that does not support [IR SETUP] codes.

1 Connect your VCR to your camcorder as a recording device (p. 62).

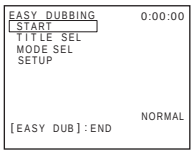
2 Prepare your VCR for recording.

- Insert a cassette for recording.
- Set the input selector to input mode, if your VCR has one.

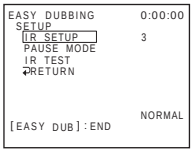
3 Prepare your camcorder for playback.

- Insert a cassette for editing.
- Slide the POWER switch repeatedly to select the PLAY/EDIT mode.

4 Press EASY DUB.



5 Turn the SEL/PUSH EXEC dial to select [SETUP], then press the dial.



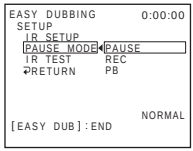
6 Turn the SEL/PUSH EXEC dial to select [IR SETUP], then press the dial.

When you connect with an A/V connecting cable, you need to check the [IR SETUP] code signal to see if your VCR can be operated by your camcorder (infrared ray emitter).

7 Turn the SEL/PUSH EXEC dial to select the [IR SETUP] code of your VCR, then press the dial.

For the [IR SETUP] code of your VCR, refer to "[IR SETUP] code list" (p. 65). When there is more than one code listed for the manufacturer of your VCR, try each code and find the most appropriate one.

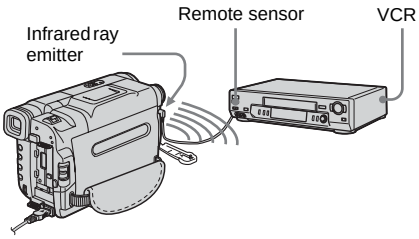
8 Turn the SEL/PUSH EXEC dial to select [PAUSE MODE], then press the dial.



9 Turn the SEL/PUSH EXEC dial to select the mode to cancel recording pause on the VCR, then press the dial.

Refer to the operating instructions supplied with your VCR for details on operation.

10 Point the infrared ray emitter of your camcorder towards the remote sensor on your VCR, from about 30 cm (12 in.) away, with no obstructions.



11 Set the VCR to recording pause.

12 Turn the SEL/PUSH EXEC dial to select [IR TEST], then press the dial.

13 Turn the SEL/PUSH EXEC dial to select [EXECUTE], then press the dial.

Recording starts on your VCR when the setting is correct. [COMPLETE] appears when the [IR SETUP] code test is finished. Go on to the next step.
When recording fails to start, select another [IR SETUP] code and try again.

14 Turn the SEL/PUSH EXEC dial to select [↩ RETURN], then press the dial.

[IR SETUP] code list

The following [IR SETUP] codes are recorded on your camcorder by default. (It is set at "3" as the default setting.)

Manufacturing company	[IR SETUP] code
Sony	1, 2, 3, 4, 5, 6
Admiral (M. Wards)	89
Aiwa	47, 54, 80
Akai	49, 51
Audio Dynamic	21, 35
Bell&Howell (M. Wards)	36
Broksonic	21, 70, 82
Canon	77, 78
Citizen	47
Craig	47, 73
Curtis Mathis	8, 77, 80
Daewoo	26, 40, 77
DBX	21, 33, 35
Dimensia	8
Emerson	26, 48, 59, 70, 80, 81, 82
Fisher	36, 37, 44, 45
Funai	80
General Electric	8, 32*, 77, 94*, 101
Goldstar/LG	47
GO VIDEO	71
Hitachi	8, 42, 78
HQ	40
Instant Replay	77, 78
JC Penny	8, 21, 33, 35, 36, 42, 77
JVC	12, 13, 14, 21, 33, 35
Kenwood	21, 33, 35, 47
LXI (Sears)	36, 37, 42, 44, 45, 47, 49, 80
Magnavox	17, 77, 78, 83
Marantz	21, 33, 35
Marta	47
Memorex	37, 77
Minolta	8, 42
Mitsubishi/MGA	22, 23, 24, 28, 29

➡*continued*

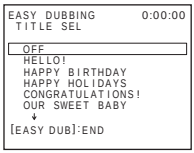
Manufacturing company	[IR SETUP] code
Multitech	23, 32, 80
NEC	21, 33, 35
Olympic	77, 78
Optimus	22
Orion	60
Panasonic	16, 17, 77, 78
Pentax	8, 42
Philco	26, 70, 77, 78
Philips	47, 77, 78, 83
Pioneer	78
Quasar	6, 16, 17, 77, 78
RCA/PROSCAN	7, 8, 16, 40, 41, 42, 77, 78, 78*, 83, 101
Realistic	22, 36, 37, 77, 80, 88
Sansui	21
Singer	73
Samsung	24, 24*, 32, 32*, 41, 94, 94*
Sanyo	26, 36, 37, 47
Scott	22, 23, 24, 28, 32, 37, 40, 41
Sharp	88, 89
Shintom	73
Signature 2000	80, 89
Sylvania	77, 78, 80, 83
Symphonic	80
Tashiro	47
Tatung	21, 33, 35
Teac	21, 33, 35, 80
Technics	77, 78
Toshiba	7, 40, 49
Wards	37, 47, 88, 89, 95
Yamaha	21, 33, 35, 36
Zenith	95

* TV/VCR component

Step 2: Selecting the title

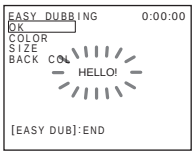
You can insert a title.
You can select one of the 8 preset titles and the 2 custom titles. See steps 1 to 4 on page 31 to create original titles.

1 Turn the SEL/PUSH EXEC dial to select [TITLE SEL], then press the dial.



2 Turn the SEL/PUSH EXEC dial to select the desired title, then press the dial.

The title flashes.



3 Change [COLOR] (color), [SIZE] (size), or [BACK COL.] (back ground color) as necessary.

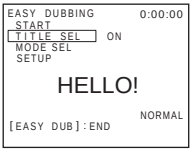
If you do not need to change them, go to Step 3 (p. 67).

1 Turn the SEL/PUSH EXEC dial to select [COLOR], [SIZE], or [BACK COL.], then press the dial. The selected item appears on the screen.

2 Turn the SEL/PUSH EXEC dial to select the desired item, then press the dial.

3 Repeat steps 1 and 2 until the title is laid out as desired.

4 **Turn the SEL/PUSH EXEC dial to select [OK], then press the dial.**
The title lights up.



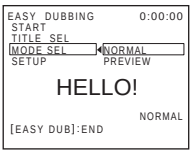
Notes
- You can put a title only into the tape of the VCR.
- If you set the background color to [FADE], the picture may not appear properly, depending on the connected VCR.

Tips
- The title color changes as follows: [WHITE] ↔ [YELLOW] ↔ [VIOLET] ↔ [RED] ↔ [CYAN] ↔ [GREEN] ↔ [BLUE]
- The title size changes as follows: [SMALL] ↔ [LARGE]
- The background color changes as follows: [FADE] ↔ [WHITE] ↔ [YELLOW] ↔ [VIOLET] ↔ [RED] ↔ [CYAN] ↔ [GREEN] ↔ [BLUE] ↔ [BLACK]

Step 3: Selecting the dubbing mode

You can choose either normal recording ([NORMAL]) or interval recording ([PREVIEW]).

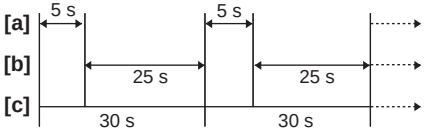
1 **Turn the SEL/PUSH EXEC dial to select [MODE SEL], then press the dial.**



2 **Turn the SEL/PUSH EXEC dial to select [NORMAL] or [PREVIEW], then press the dial.**

When you select [NORMAL]
You can record into the VCR normally.

When you select [PREVIEW]
You can make a time-lapse dubbing by setting the VCR to automatically repeat 5 seconds' recording and 25 seconds' standby.

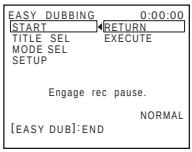


a. Recording time (VCR)
b. Waiting time (VCR)
c. Playback time (camcorder)

Step 4: Performing Easy Dubbing

Make sure that your camcorder and VCR are connected, and that the VCR is set to recording pause.

1 **Turn the SEL/PUSH EXEC dial to select [START], then press the dial.**



➡*continued*

2 **Turn the SEL/PUSH EXEC dial to select [EXECUTE], then press the dial.**

When dubbing ends, your camcorder and VCR stop automatically.
Then the display returns to the Easy Dubbing initial screen.

To stop dubbing during editing

Press ■ (stop) on your camcorder.

To quit Easy Dubbing

Press EASY DUB.

Note

- [NOT READY] appears on the screen when [START] is not carried out.

Recording pictures from a VCR (TRV260/265)

You can record and edit pictures from a VCR on a tape inserted in your camcorder. Insert a cassette for recording in your camcorder.

Note

- Your camcorder can only record from an NTSC source. For example, European video or TV programs (PAL/SECAM) cannot be recorded correctly. See page 81 for details on TV color systems.

1 **Connect your VCR to your camcorder (p. 62).**

Use an i.LINK cable (optional) for connection.

2 **Slide the POWER switch repeatedly to select the PLAY/EDIT mode.**

3 **Press ● (rec) and the button on its right simultaneously on your camcorder, then immediately press ❚❚ (pause) on your camcorder.**

4 **Start playing the cassette on your VCR.**

The picture played on the connected device appears on the LCD screen of your camcorder.

5 **Press ❚❚ (pause) at the point you want to start recording.**

6 **Press ■ (stop) to stop recording.**

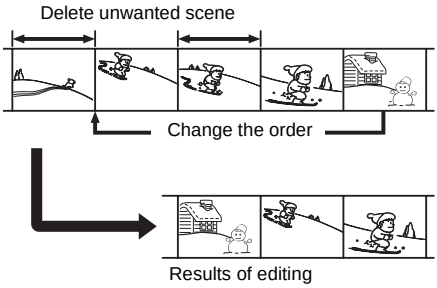
Tip

- DV IN appears when you connect your camcorder and other devices via an i.LINK cable. (This indicator may also appear on your TV.)

Dubbing selected scenes from a tape

– Digital program editing (TRV260/265)

You can select up to 20 scenes (programs) and record them in the desired order to other recording device such as VCR.



Step 1: Preparing your camcorder and VCR for operation

Follow the steps below when you are performing digital program editing for the first time to a tape in a VCR. You can skip this setting if you have set up the VCR by the following procedure before.

Notes

- You cannot perform the Digital program editing on a VCR that does not support [IR SETUP] codes.
- When your camcorder is connected to the VCR via the i.LINK DV Interface, you cannot record the title or indicators.

1 Connect your VCR to the camcorder as a recording device (p. 62).

You can use either the A/V connecting cable or the i.LINK cable to make the connection. The dubbing procedure is easier with the i.LINK connection.

2 Prepare your VCR.

- Insert a cassette for recording.
- Set the input selector to input mode, if your VCR has one.

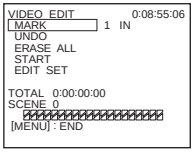
3 Prepare your camcorder (playing device).

- Insert a cassette for editing.
- Slide the POWER switch repeatedly to select the PLAY/EDIT mode.

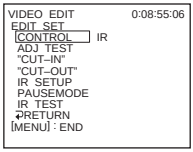
4 Press MENU.

5 Turn the SEL/PUSH EXEC dial to select ETC (OTHERS), then press the dial.

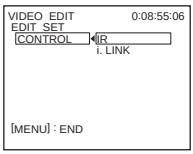
6 Turn the SEL/PUSH EXEC dial to select [VIDEO EDIT], then press the dial.



7 Turn the SEL/PUSH EXEC dial to select [EDIT SET], then press the dial.



8 Turn the SEL/PUSH EXEC dial to select [CONTROL], then press the dial.



➡*continued*

9 **Turn the SEL/PUSH EXEC dial to select [i.LINK] or [IR], then press the dial.**

When connecting with an i.LINK cable

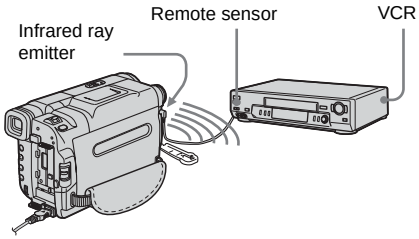
After selecting [i.LINK], go on to "Step 2: Adjusting the synchronization of the VCR" (p. 70).

When connecting with an A/V connecting cable

After selecting [IR], follow the procedure described in "To set the [IR SETUP] code" (p. 70).

To set the [IR SETUP] code

When you connect with an A/V connecting cable, you need to check the [IR SETUP] code signal to see if your VCR can be operated by your camcorder (infrared ray emitter).



1 **Turn the SEL/PUSH EXEC dial to select [IR SETUP], then press the dial.**

2 **Turn the SEL/PUSH EXEC dial to select the [IR SETUP] code of your VCR, then press the dial.**
For the [IR SETUP] code of your VCR, refer to "[IR SETUP] code list" (p. 65). When there is more than one code listed for the manufacturer of your VCR, try each code and find the most appropriate one.

3 **Turn the SEL/PUSH EXEC dial to select [PAUSEMODE], then press the dial.**

4 **Turn the SEL/PUSH EXEC dial to select the mode to cancel recording pause on the VCR, then press the dial.**
Refer to the operating instructions supplied with your VCR for details on operation.

5 **Point the infrared ray emitter of your camcorder towards the remote sensor on your VCR, from about 30 cm (12 in.) away, with no obstructions.**

6 **Insert a cassette into your VCR, and set the VCR to recording pause.**

7 **Turn the SEL/PUSH EXEC dial to select [IR TEST], then press the dial.**

8 **Turn the SEL/PUSH EXEC dial to select [EXECUTE], then press the dial.**
The recording starts on your VCR when the setting is correct. [COMPLETE] appears when the [IR SETUP] code test is finished. Go on to "Step 2: Adjusting the synchronization of the VCR" (p. 70).
When recording fails to start, select another IR code and try again.

Step 2: Adjusting the synchronization of the VCR

Follow the steps below when you are performing digital program editing for the first time to a tape in a VCR. You can skip this setting if you have set up your VCR before using the following procedure.
You can adjust the synchronization of your camcorder and the VCR to avoid not recording the starting scene.

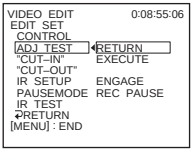
1 **Remove the cassette from your camcorder. Prepare a pen and paper to take notes.**

2 **Set the VCR to recording pause mode.**
Skip this step if you have selected [i.LINK] in step 9 on p. 70.

Note

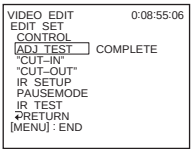
- Run the tape for about 10 seconds before pausing. The starting scenes may not get recorded when you start recording from the beginning of the tape.

3 Turn the SEL/PUSH EXEC dial to select [ADJ TEST], then press the dial.



4 Turn the SEL/PUSH EXEC dial to select [EXECUTE], then press the dial.

[EXECUTING] flashes and a picture (about 50 seconds long) with 5 [IN] and [OUT] indicators each for adjusting synchronization is recorded. [COMPLETE] appears when the recording is finished.

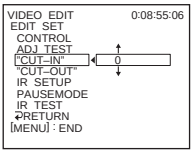


5 Rewind the tape on your VCR, then play back in slow mode.

5 opening numbers for each [IN] and closing numbers for each [OUT] appear.

6 Take a note of the opening numerical value of each [IN] and the closing number value of each [OUT], then calculate the average numerical value for each [IN] and [OUT].

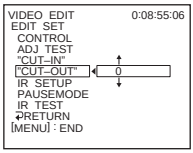
7 Turn the SEL/PUSH EXEC dial to select [”CUT-IN”], then press the dial.



8 Turn the SEL/PUSH EXEC dial to select the average numerical value of [IN], then press the dial.

The calculated start position for recording is set.

9 Turn the SEL/PUSH EXEC dial to select [”CUT-OUT”], then press the dial.



10 Turn the SEL/PUSH EXEC dial to select the average numerical value of [OUT], then press the dial.

The calculated stop position for recording is set.

11 Turn the SEL/PUSH EXEC dial to select [↩ RETURN], then press the dial.

Recording the selected scenes as programs

When you are performing digital program editing for the first time to a tape in a VCR, go through the procedures described in Steps 1 and 2 (p. 69 to p. 70) beforehand.

1 Prepare a cassette.

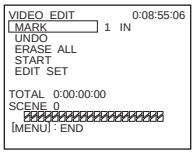
Insert a tape to be played back into the camcorder.
Insert a cassette for recording into your VCR.

➡*continued*

2 **Press MENU.**

3 **Turn the SEL/PUSH EXEC dial to select ETC (OTHERS), then press the dial.**

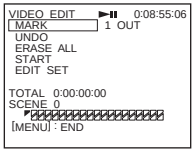
4 **Turn the SEL/PUSH EXEC dial to select [VIDEO EDIT], then press the dial.**



5 **Search for the beginning of the first scene that you want to record on your camcorder, then pause playback.**

6 **Turn the SEL/PUSH EXEC dial to select [MARK], then press the dial.**

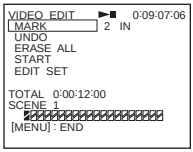
The starting point of the first program is set, and the upper part of the program mark changes to light blue.



7 **Search for the end of the first scene that you want to record on your camcorder, then pause playback.**

8 **Press the SEL/PUSH EXEC dial.**

The ending point of the first program is set, and the lower part of the program mark changes to light blue.

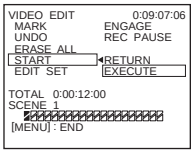


9 **Repeat steps 5 to 8 and create programs.**

10 **Set your VCR to the recording pause.**

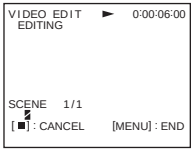
Skip this step if your camcorder is connected via an i.LINK cable.

11 **Turn the SEL/PUSH EXEC dial to select [START], then press the dial.**



12 **Turn the SEL/PUSH EXEC dial to select [EXECUTE], then press the dial.**

A search for the beginning of the first program starts, then the recording starts. [SEARCH] appears during search and [EDITING] appears during editing.



When a program is recorded, the program mark stops flashing and remains lit. When all programs have been recorded, the program editing operation stops automatically.

To cancel recording, press (■) (stop).

To end Digital program editing

Press MENU.

To save a program without using it to record

Press MENU in step 11.
The program is stored in memory until the cassette is ejected.

To erase programs

1 Follow steps 1 to 4 in "Recording the selected scenes as programs" (p. 71).

2 Turn the SEL/PUSH EXEC dial to select [UNDO] or [ERASE ALL], then press the dial.

When you select [UNDO]
You can erase the last set program.

When you select [ERASE ALL]
You can erase all the programs.

3 Turn the SEL/PUSH EXEC dial to select [EXECUTE], then press the dial.
The programs are deleted. To cancel this operation, select [RETURN], and then press the dial.

Notes

- You cannot set starting point or ending point on a blank section of the tape. If there is a blank section, the total time may not appear correctly.
- When you cannot operate the device correctly using an i.LINK cable connection, select [IR] in step 9 on p. 70, and set the [IR SETUP] code.

Troubleshooting

If you run into any problem using your camcorder, use the following table to troubleshoot the problem. If the problem persists, remove the power source and contact your Sony dealer.

If "C:□□:□□" is displayed on the LCD screen or the viewfinder, the self-diagnosis display function is activated. See page 79 for details.

Overall operations

Symptom	Cause and/or Corrective Actions
The power does not turn on.	• The battery pack is discharged, running low, or not attached to the camcorder. →Attach a charged battery pack to the camcorder. (p. 12) →Use the AC Adaptor to connect to the wall outlet. (p. 15)
The camcorder does not operate even when the power is set to on.	→Disconnect the AC Adaptor from the wall outlet or remove the battery pack, then reconnect it after about 1 minute. If the functions still do not work, press the RESET button using a sharp-pointed object. (If you press the RESET button, all settings including the clock setting are reset.)
For Hi8 TRV228/428/ TRV265: The supplied Remote Commander does not function.	→Set [COMMANDER] in the ETC (OTHERS) menu to [ON]. (p. 60) →Insert a battery into the battery holder with the + – polarities correctly matching the + – marks. If this still does not solve the problem, insert a new battery since the battery is dead. (p. 95) →Remove any obstructions between the Remote Commander and the remote sensor.

Batteries/Power sources

Symptom	Cause and/or Corrective Actions
The CHG (charge) lamp does not light while the battery pack is being charged.	→Attach the battery pack to the camcorder correctly. If the lamp still does not light up, then it indicates that no power is supplied from the wall outlet. • The battery charge is completed. (p. 12)
The CHG (charge) lamp flashes while the battery pack is being charged.	→Attach the battery pack to the camcorder correctly. If the problem persists, disconnect the AC Adaptor from the wall outlet and contact your Sony dealer. The battery pack may be damaged. (p. 12)
The battery pack is quickly discharged.	• The temperature of the environment is too low, or the battery pack has not been charged enough. This is not a malfunction. →Fully charge the battery again. If the problem persists, replace the battery pack with a new one. It may be damaged. (p. 12, 83)

Symptom	Cause and/or Corrective Actions
The remaining battery time indicator does not indicate the correct time.	• The temperature of the environment is too high or too low, or the battery pack has not been charged enough. This is not a malfunction. ➔Fully charge the battery again. If the problem persists, replace the battery pack with a new one. It may be damaged. (p. 12, 83)
The power turns off frequently although the remaining battery indicator indicates that the battery pack has enough power to operate.	• A problem has occurred in the remaining battery time indicator, or the battery pack has not been charged enough. ➔Fully charge the battery again to correct the indication. (p. 12)
The power abruptly turns off.	• [A.SHUT OFF] in the ETC (OTHERS) menu is set to [5 min]. (p. 59) ➔When approximately 5 minutes have elapsed while you do not operate your camcorder, the camcorder is automatically turned off. Slide the POWER switch down to turn the power on again. (p. 15) Or use the AC adaptor.
A problem occurs when the camcorder is connected to the AC Adaptor.	➔Turn off the power, and disconnect the AC Adaptor from the wall outlet. Then, connect it again.

Cassette tapes

Symptom	Cause and/or Corrective Actions
Cassette cannot be ejected from the compartment.	➔Make sure the power source (battery pack or AC Adaptor) is connected correctly. (p. 12) ➔Remove the battery pack from the camcorder, then attach it again. (p. 12) ➔Attach a charged battery pack to the camcorder. (p. 12)
Cassette is not ejected even when the cassette lid is open.	➔Moisture condensation is starting in your camcorder. (p. 86)
The remaining tape indicator is not displayed.	➔Set [REMAIN] to [ON] in the (TAPE SET) menu to always display the remaining tape indicator. (p. 55)

LCD screen/viewfinder

Symptom	Cause and/or Corrective Actions
An unknown language appears on the screen.	➔See page 19.
An unknown picture appears on the screen.	➔The camcorder is in [DEMO MODE]. (The [DEMO MODE] is automatically displayed when you leave the camcorder for 10 minutes after selecting CAMERA without inserting a cassette.) Insert a cassette to cancel [DEMO MODE]. You can also set [DEMO MODE] to [OFF] in the menu. (p. 58)
An unknown indicator appears on the screen.	➔Refer to the indicator list. (p. 97)

➔*continued*

Symptom	Cause and/or Corrective Actions
The picture in the viewfinder is not clear.	→Use the viewfinder lens adjustment lever to adjust the lens. (p. 16)
The picture in the viewfinder has disappeared.	→Close the LCD panel. The picture is not displayed in the viewfinder when the LCD panel is open. (p. 16)

Recording

Symptom	Cause and/or Corrective Actions
The tape does not start when you press REC START/STOP.	→Slide the POWER switch to turn on the CAMERA lamp. (p. 15) →The tape has reached the end. Rewind it, or insert a new cassette. →Set the write-protect tab to REC or insert a new cassette. (p. 82) →The tape is stuck to the drum due to moisture condensation. Remove the cassette and leave your camcorder for at least 1 hour, then re-insert the cassette. (p. 86)
The power abruptly turns off.	• [A.SHUT OFF] in the ETC (OTHERS) menu is set to [5 min]. (p. 59) →When approximately 5 minutes have elapsed while you do not operate your camcorder, the camcorder is automatically turned off. Slide the POWER switch down to turn the power on again (p. 15). Or use the AC Adaptor. • The battery pack is discharged. (p. 12)
For Hi8 TRV328/428/ TRV260/265: The SteadyShot does not function.	→Set [STEADYSHOT] to [ON] in the (CAMERA SET) menu. (p. 50) →Set [16:9 WIDE] to [OFF] in the (CAMERA SET) menu. (p. 48)
The auto focus does not function.	→Press FOCUS to enable auto focus. (p. 29) →The recording conditions are not suitable for auto focus. Adjust the focus manually. (p. 29)
A vertical band appears when recording candlelight or electric light in the dark.	• This occurs when the contrast between the subject and the background is too high. This is not a malfunction.
A vertical band appears when recording a bright subject.	• This phenomenon is called the smear effect. This is not a malfunction.
The color of the picture is not correctly displayed.	→Deactivate the NightShot plus function. (p. 28)
Picture appears too bright on the screen, and the subject does not appear on the screen.	→Deactivate the NightShot plus function in bright places. (p. 28) →Cancel the back light function. (p. 27)
The shutter sound is not heard.	→Set [BEEP] to [MELODY] or [NORMAL] in the ETC (OTHERS) menu. (p. 59)
For Hi8 TRV328/428/ TRV260/265: Black bands appear when you record a TV screen or computer screen.	→Set [STEADYSHOT] to [OFF] in the (CAMERA SET) menu. (p. 50)

Symptom	Cause and/or Corrective Actions
Flickering or changes in color occurs.	→This occurs when recording pictures under a fluorescent lamp, sodium lamp, or mercury lamp in the soft portrait or sports lesson mode. Cancel [PROGRAM AE] in this case. (p. 44)
END SEARCH does not work.	• The cassette was ejected after recording. • The cassette is new and has nothing recorded.
END SEARCH does not work correctly.	• There is a blank section in the beginning or middle of the tape. This is not a malfunction.
The built-in light does not function.	→Press LIGHT repeatedly to select ON. →If the problem presists, contact your Sony dealer or local authorized Sony service facility.

Playback

Symptom	Cause and/or Corrective Actions
Cannot play back.	→If the tape has reached the end, rewind the tape. (p. 34)
Horizontal lines appear on the picture. The displayed pictures are not clear or do not appear.	→Clean the head using the cleaning cassette (optional). (p. 86) • For Hi8 TRV128/228/328/428: The television's video channel is not adjusted correctly. →Adjust it. (p. 39) →For Hi8 TRV128/228/328/428: Set [EDIT] to [OFF] in the P (PLAYER SET) menu. (p. 51)
No sound or only a low sound is heard.	→For TRV260/265: Set [HiFi SOUND] to [STEREO] in the V (VCR SET) menu. (p. 51) →Turn up the volume. (p. 34) →For TRV260/265: In the V (VCR SET) menu, adjust [AUDIO MIX] from the [ST2] side until the sound is heard appropriately. (p. 52) →When you are using an S VIDEO plug, make sure the black plug for Hi8 TRV128/228/328/428, or the red and white plugs for TRV260/265 of the A/V connecting cable are connected as well. (p. 39)
The sound breaks off.	→Clean the head using the cleaning cassette (optional). (p. 86)
For TRV265: Cannot perform the Date search with the recording date displayed on the screen.	• There is a blank section in the beginning or middle of the tape. This is not a malfunction.
For TRV260/265: "---" is displayed on the screen.	• The tape you are playing was recorded without setting the date and time. • A blank section on the tape is being played. • The data code on a tape with a scratch or noise cannot be read.
END SEARCH does not work.	• The cassette was ejected after recording. • The cassette is new and has nothing recorded.
END SEARCH does not work correctly.	• There is a blank section in the beginning or middle of the tape. This is not a malfunction.

→*continued*

Symptom	Cause and/or Corrective Actions
For TRV260/265: The picture does not appear on the screen when playing back a tape.	• The tape is recorded in the Hi8 Hi8/standard 8 mm 8 system.
Noises appear on the screen.	• The tape was recorded in a TV color system other than that of your camcorder. (p. 81)

Dubbing/Editing

Symptom	Cause and/or Corrective Actions
Cannot dub correctly using the A/V connecting cable.	→Set [DISPLAY] to [LCD] in the ETC (OTHERS) menu. (p. 60)
For TRV260/265: Pictures from connected devices are not displayed correctly.	• The input signal is not NTSC. (p. 68)
For TRV260/265: Digital program editing does not function.	→Set the input selector on the VCR correctly, then check the connection between your camcorder and the VCR. (p. 62) →When your camcorder is connected to a DV device that is not a Sony product via an i.LINK cable, select [IR] in step 9 of “Step 1: Preparing your camcorder and VCR for operation.” (p. 69) →Adjust the synchronization of the VCR. (p. 70) →Enter a correct [IR SETUP] code. (p. 65) →Select the mode used to cancel recording pause again. (p. 70) →Set your camcorder and the VCR more than 30 cm (12 in.) apart. (p. 70) • The program may not be set to a blank section on the tape.
For TRV260/265: The VCR is not responding properly during Digital program editing when it is connected via an i.LINK cable.	→While connecting via an i.LINK cable, select [IR] in step 9 of “Step 1: Preparing your camcorder and VCR for operation.” (p. 69)
For Hi8 TRV128/228/328/428: Easy Dubbing does not function.	• Your VCR and/or video camera recorder is not set correctly. →Make sure the input selector of the VCR is set to LINE. Also, make sure the power switch of the video camera recorder is set to VCR. (p. 64) • The [IR SETUP] code or [PAUSE MODE] is not set correctly. → Select the correct [IR SETUP] code and [PAUSE MODE], according to your VCR. Then confirm VCR operation with the [IR TEST] function. (p. 64)

Warning indicators and messages

Self-diagnosis display/Warning indicators

If indicators appear on the screen, check the following. See the page in parentheses for details.

Indication	Cause and/or Corrective Actions
C:□□ : □□/E:□□ : □□ (Self-diagnosis display)	Some symptoms can be fixed by yourself. If the problem persists even after you tried a couple of times, contact your Sony dealer or local authorized Sony service facility. **C:04:□□** →A battery pack that is not an "InfoLITHIUM" battery pack is being used. Use an "InfoLITHIUM" battery pack. (p. 83) **C:21:□□** →Moisture condensation has occurred. Remove the cassette and leave your camcorder for at least 1 hour, then re-insert the cassette. (p. 86) **C:22:□□** →Clean the head using a cleaning cassette (optional). (p. 86) **C:31□□ / C:32□□** →Symptoms that are not described above have occurred. Remove and insert the cassette, then operate your camcorder again. Do not perform this procedure if moisture starts to condense. (p. 85) →Remove the power source. Reconnect it again and operate your camcorder again. →Change the tape. →Press the RESET button and operate your camcorder again. **E:61:□□ / E:62:□□** →Contact your Sony dealer or local authorized Sony service facility. Inform them of the 5-digit code, which starts from "E."
(Battery level warning)	• The battery pack is nearly used up. • Depending on the operating, environmental, or battery conditions, the indicator may flash, even if there are approximately 5 to 10 minutes remaining.
(Moisture condensation warning)*	→Eject the cassette, set the POWER switch to (CHG) OFF, and leave it for about 1 hour with the cassette lid open. (p. 86)
(Warning indicator pertaining to the tape)	**Slow flashing:** • There is less than 5 minutes remaining on the tape. • No cassette is inserted.* • The write-protect tab on the cassette is set to lock. (p. 82)* **Fast flashing:** • The tape has run out.*

→*continued*

Indication	Cause and/or Corrective Actions
⏏ (Eject cassette warning)*	**Slow flashing:** • The write-protect tab on the cassette is set to lock. (p. 82) **Fast flashing:** • Moisture condensation has occurred. (p. 86) • The tape has run out. • The self-diagnosis display code is displayed. (p. 79)

* You hear a melody or beep sound when the warning indicators appear on the screen.

Warning messages

The following messages will appear to prompt you to correct the situation.

Subjects	Indications	Corrective Actions/References
Battery	Use the “InfoLITHIUM” battery pack.	→See page 83.
	Battery level is low.	→Charge the battery. (p. 12)
	Old battery. Use a new one.	→See page 83
	⏏ Re-attach the power source.	–
Moisture condensation	⏏ Moisture condensation. Eject the cassette	→See page 86.
	Moisture condensation. Turn off for 1H.	→See page 86.
Cassette/tape	Insert a cassette.	→See page 18.
	⏏ Reinsert the cassette.	→The cassette might be damaged, etc.
	⏏ The tape is locked - check the tab.	→See page 82.
	The tape has reached the end.	–
Others	Cannot record due to copyright protection.	–
	Dirty video head. Use a cleaning cassette.	→See page 86.
	Cannot start Easy Handycam	→See page 26 and 36.
	Cannot cancel Easy Handycam	→See page 26 and 36.
	Cannot start Easy Handycam with USB connected	–
	Invalid button with Easy Handycam operation	→See page 26 and 36.
	USB invalid during Easy Handycam	→Press SEL/PUSH EXEC dial.

Using your camcorder abroad

Power supply

You can use your camcorder in any country/regions using the AC Adaptor supplied with your camcorder within AC 100 V to 240 V, 50/60 Hz.
Use a commercially available AC plug adaptor [a], if necessary, depending on the design of the wall outlet [b].

On TV color systems

Your camcorder is an NTSC system-based camcorder. If you want to view the playback picture on a TV, it must be an NTSC system-based TV (see following list) with the AUDIO/VIDEO input jack.

System	Used in
NTSC	Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Guyana, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.
PAL	Australia, Austria, Belgium, China, Czech Republic, Denmark, Finland, Germany, Holland, Hong Kong, Hungary, Italy, Kuwait, Malaysia, New Zealand, Norway, Poland, Portugal, Singapore, Slovak Republic, Spain, Sweden, Switzerland, Thailand, United Kingdom, etc.
PAL - M	Brazil
PAL - N	Argentina, Paraguay, Uruguay
SECAM	Bulgaria, France, Guiana, Iran, Iraq, Monaco, Russia, Ukraine, etc.

Simple setting of clock by time difference

You can easily set the clock to the local time by setting a time difference when using your camcorder abroad. Select [WORLD TIME] in the ETC (OTHERS) menu, then set the time difference (p. 59).

Usable cassette tapes

You can use standard 8 mm 8 and Hi8 Hi8, Digital8 video cassettes on your camcorder.

Hi8 Hi8 system

This Hi8 Hi8 system is an extension of the standard 8 mm 8 system, and was developed to produce higher quality pictures.
You cannot play back a tape recorded in the Hi8 Hi8 system correctly on video recorders/players other than a Hi8 video recorder/player.

Digital8 system

This video system has been developed to enable digital recording to Hi8 Hi8/Digital8 video cassette.
The recording time when you use your Digital8 system camcorder on Hi8 Hi8/standard 8 mm 8 tape is half the recording time when using the conventional Hi8 Hi8/standard 8 mm 8 system camcorder. (120 minutes of recording time becomes 60 minutes in the SP mode.)

To prevent a blank section from being made on the tape

Press END SEARCH to go to the end of the recorded section before you begin the next recording in the following cases:
– You have ejected the cassette during recording.
– You have played back the tape.
If there is a blank section or discontinuous signals on your tape, re-record from the beginning to the end of the tape as described above.

Copyright signal

When you play back

If the cassette you play back on your camcorder contains copyright signals, you cannot copy it to a tape in another video camera connected to your camcorder.

For TRV260/265:

When you record

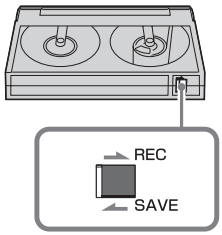
You cannot record software on your camcorder that contains copyright control signals for copyright protection of software.

[Cannot record due to copyright protection.] appears on the LCD screen, or on the TV screen if you try to record such software.
Your camcorder does not record copyright control signals on the tape when it records.

Notes on use

To prevent accidental erasure

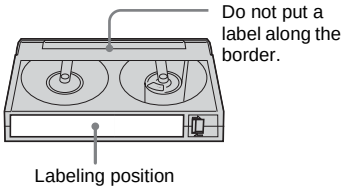
Slide the write-protect tab on the cassette to set to SAVE.



REC: The cassette can be recorded.
SAVE: The cassette cannot be recorded (write-protected).

When labeling the cassette

Be sure to place the label only on the locations as shown in the following illustration so as not to cause malfunction of your camcorder.



After using the cassette

Rewind the tape to the beginning to avoid distortion of the picture or the sound. The cassette should then be put in its case, and stored in an upright position.

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video Hi8, Digital 8, 8, Hi8 and are trademarks.

About the "InfoLITHIUM" battery pack

This unit is compatible with the "InfoLITHIUM" battery pack (M series). Your camcorder operates only with the "InfoLITHIUM" battery pack.
"InfoLITHIUM" M series battery packs have the InfoLITHIUM M SERIES mark.

What is the "InfoLITHIUM" battery pack?

The "InfoLITHIUM" battery pack is a lithium-ion battery pack that has functions for communicating information related to operating conditions between your camcorder and an optional AC Adaptor/charger.
The "InfoLITHIUM" battery pack calculates the power consumption according to the operating conditions of your camcorder, and displays the remaining battery time in minutes. With an AC Adaptor/charger (optional), the remaining battery time and charging time appear.

To charge the battery pack

- Be sure to charge the battery pack before you start using your camcorder.
- We recommend charging the battery pack in an ambient temperature of between 10°C to 30°C (50°F to 86°F) until the CHG (charge) lamp turns off. If you charge the battery pack outside of this temperature range, you may not be able to charge it efficiently.
- After charging is complete, either disconnect the cable from the DC IN jack on your camcorder or remove the battery pack.

To use the battery pack effectively

- Battery pack performance decreases when the surrounding temperature is 10°C (50°F) or below, and the length of time you can use the battery pack becomes shorter. In that case, do one of the following to use the battery pack for a longer time.
  - Put the battery pack in a pocket to warm it up, and insert it in your camcorder right before you start taking shots.
  - Use a large capacity battery pack: NP-QM71/QM71D/QM91/QM91D (optional).
- Frequent use of the LCD screen or a frequent playback, fast forward or rewind operation wears out the battery pack faster. We recommend using a large capacity battery pack: NP-QM71/QM71D/QM91/QM91D (optional).
- Be sure to set the POWER switch to (CHG) OFF when not recording or playing back on your camcorder. The battery pack is also consumed when your camcorder is in recording standby or playback pause.
- Have spare battery packs ready for two or three times the expected recording time, and make trial recordings before making the actual recording.
- Do not expose the battery pack to water. The battery pack is not water resistant.

About remaining battery time indicator

- When the power goes off even though the remaining battery time indicator indicates that the battery pack has enough power to operate, charge the battery pack fully again. The indication on the remaining battery time will be indicated correctly. Note, however, that the battery indication will not be restored if it is used in high temperatures for a long time, or if left in a fully charged state, or when the battery pack is frequently used.
  Use the remaining battery time indication as a guide to the approximate shooting time.
- The mark that indicates low battery flashes even if there are still 5 to 10 minutes of battery time remaining, depending on the operating conditions or ambient temperature and environment.

About storage of the battery pack

- If the battery pack is not used for a long time, fully charge the battery pack and use it on your camcorder once a year to maintain the proper function.
  To store the battery pack, remove it from your camcorder and put it in a dry, cool place.
- To completely use up the battery pack on your camcorder, leave your camcorder in tape

➡*continued*

recording standby until the power goes off without a cassette inserted.

About battery life

- The battery life is limited. Battery capacity drops little by little as you use it more and more, and as time passes. When the available battery time is shortened considerably, a probable cause is that the battery pack has reached the end of its life. Please buy a new battery pack.
- The battery life varies depending on how it is stored and the operating conditions and environment for each battery pack.

"InfoLITHIUM" is a trademark of Sony Corporation.

About i.LINK

The DV Interface on this unit is an i.LINK-compliant DV Interface. This section describes the i.LINK standard and its features.

What is i.LINK?

i.LINK is a digital serial interface for transferring digital video, digital audio, and other data to other i.LINK-compatible device. You can also control other device using the i.LINK.

i.LINK-compatible device can be connected using an i.LINK cable. Possible applications are operations and data transactions with various digital AV devices.

When two or more i.LINK-compatible device are connected to this unit in a daisy chain, operations and data transactions are possible with not only the device that this unit is connected to but also with other devices via the directly connected device.

Note, however, that the method of operation sometimes varies according to the characteristics and specifications of the device to be connected. Also, operations and data transactions may not be possible on some connected device.

Note

- Normally, only one device can be connected to this unit with the i.LINK cable. When connecting this unit to i.LINK-compatible device having two or more DV Interfaces, refer to the operating instructions of the device to be connected.

Tips

- i.LINK is a more familiar term for the IEEE 1394 data transport bus proposed by Sony, and is a trademark approved by many corporations.
- IEEE 1394 is an international standard standardized by the Institute of Electrical and Electronics Engineers.

About i.LINK Baud rate

i.LINK's maximum baud rate varies according to the device. There are three types.

S100 (approx. 100Mbps*)
S200 (approx. 200Mbps)
S400 (approx. 400Mbps)

The baud rate is listed under "Specifications" in the operating instructions of each piece of

device. It is also indicated near the i.LINK interface on some device.
The maximum baud rate for device that does not have any indication (such as this unit) is "S100."
The baud rate may differ from the indicated value when the unit is connected to device with a different maximum baud rate.

* What is Mbps?
Mbps stands for "megabits per second," or the amount of data that can be sent or received in one second. For example, a baud rate of 100 Mbps means that 100 megabits of data can be sent in one second.

To use i.LINK functions on this unit

For details on how to dub when this unit is connected to other video device having a DV Interface, see page 62, 63.
This unit can also be connected to other i.LINK (DV Interface) compatible device made by Sony (e.g. a VAIO series personal computer) as well as to video device.
Before connecting this unit to your computer, make sure that application software supported by this unit is already installed on your computer.
Some i.LINK compatible video device such as Digital Televisions, DVD recorders/players, and MICROMV recorders/players are not compatible with DV device. Before connecting to other device, be sure to confirm whether the device is compatible with DV device or not.
For details on precautions and compatible application software, refer also to the operating instructions for the device to be connected.

About the required i.LINK cable

Use the Sony i.LINK 4-pin-to-4-pin cable (during DV dubbing).

i.LINK and ⁞ are trademarks of Sony Corporation.

Maintenance and precautions

On use and care

- Do not use or store the camcorder and accessories in the following locations.
  - Anywhere extremely hot or cold. Never leave them exposed to temperatures above 60°C (140°F), such as under direct sunlight, near heaters or in a car parked in the sun. They may malfunction or become deformed.
  - Near strong magnetic fields or mechanical vibration. The camcorder may malfunction.
  - Near strong radio waves or radiation. The camcorder may not be able to record properly.
  - Near AM receivers and video equipment. Noise may occur.
  - Sandy beach or anywhere dusty. If sand or dust gets in your camcorder, it may malfunction. Sometimes this malfunction cannot be repaired.
  - Near windows or outdoors, where the LCD screen, the viewfinder, or the lens may be exposed to direct sunlight. This damages the inside of the viewfinder or the LCD screen.
  - Anywhere very humid.
- Operate your camcorder on DC 7.2 V (battery pack) or DC 8.4 V (AC Adaptor).
- For DC or AC operation, use the accessories recommended in these operating instructions.
- Do not let your camcorder get wet, for example, from rain or sea water. If your camcorder gets wet, it may malfunction. Sometimes this malfunction cannot be repaired.
- If any solid object or liquid get inside the casing, unplug your camcorder and have it checked by a Sony dealer before operating it any further.
- Avoid rough handling, disassembling, modifying, or mechanical shock. Be particularly careful of the lens.
- Keep the POWER switch setting to (CHG) OFF when you are not using your camcorder.

➡*continued*

- Do not wrap your camcorder with a towel, for example, and operate it. Doing so might cause heat to build up inside.
- When disconnecting the power code, pull by the plug and not the code.
- Do not damage the power code such as by placing anything heavy on it.
- Keep metal contacts clean.
- Keep the Remote Commander and button-type battery out of children's reach. If the battery is accidentally swallowed, consult a doctor immediately.
- If the battery electrolytic liquid has leaked,

– consult your local authorized Sony service facility.
– wash off any liquid that may have contacted your skin.
– if any liquid gets in your eyes, wash with plenty of water and consult a doctor.

When not using your camcorder for a long time

Occasionally turn it on and let it run such as by playing back tapes for about 3 minutes. Otherwise, unplug it from the wall outlet.

Moisture condensation

If your camcorder is brought directly from a cold place to a warm place, moisture may condense inside your camcorder, on the surface of the tape, or on the lens. In this state, the tape may stick to the head drum and be damaged or your camcorder may not operate correctly. If there is moisture inside your camcorder, [Moisture condensation. Eject the cassette] or [Moisture condensation. Turn off for 1H.] appears. The indicator will not appear when the moisture condenses on the lens.

If moisture condensation has occurred

None of the functions except cassette ejection will work. Eject the cassette, turn off your camcorder, and leave it for about one hour with the cassette lid open. Your camcorder can be used again if the or does not appear when the power is turned on again.
If moisture starts to condense, your camcorder sometimes cannot detect condensation. If this happens, the cassette is sometimes not ejected for 10 seconds after the cassette lid is opened. This is not a malfunction. Do not close the cassette lid until the cassette is ejected.

Notes on moisture condensation

Moisture may condense when you bring your camcorder from a cold place into a warm place (or vice versa) or when you use your camcorder in a humid place as shown below.

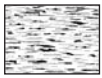
- When you bring your camcorder from a ski slope into a place warmed up by a heating device.
- When you bring your camcorder from an air-conditioned car or room into a hot place outside.
- When you use your camcorder after a squall or a shower.
- When you use your camcorder in a hot and humid place.

How to prevent moisture condensation

When you bring your camcorder from a cold place into a warm place, put your camcorder in a plastic bag and seal it tightly. Remove the bag when the air temperature inside the plastic bag has reached the surrounding temperature (after about one hour).

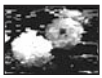
Video head

- When the video head becomes dirty, you cannot record pictures normally, or distorted picture or sound is played back.
- The video head suffers from wear after long use. If you cannot obtain a clear image even after using a cleaning cassette, it might be because the video head is worn. Please contact your Sony dealer or local authorized Sony service facility to have the video head replaced.
- For Hi8 TRV128/228/328/428:
  If the following problem occurs, clean the video heads for 10 seconds with the Sony V8-25CLD cleaning cassette (optional).
  – Playback pictures contains noise or the screen is displayed in blue.
  – Playback pictures are hardly visible.



  – Playback pictures do not appear.
  – [Dirty video head. Use a cleaning cassette.] appears on the screen during recording.

• For TRV260/265:
If the following problem occurs, clean the video heads for 10 seconds with the Sony V8-25CLD cleaning cassette (optional).
– Mosaic-pattern noise appears on the playback picture or the screen is displayed in blue.



– Playback pictures do not move.
– Playback pictures do not appear or the sound breaks off.
– [Dirty video head. Use a cleaning cassette.] appears on the screen during recording.

LCD screen

• Do not add excessive pressure on the LCD screen, as it may cause damage.
• If your camcorder is used in a cold place, a residual image may appear on the LCD screen. This is not a malfunction.
• While using your camcorder, the back of the LCD screen may heat up. This is not a malfunction.

To clean the LCD screen

• If fingerprints or dust make the LCD screen dirty, it is recommended you using the cleaning cloth (supplied) to clean it. When you use the LCD Cleaning Kit (optional), do not apply the cleaning liquid directly to the LCD screen. Use cleaning paper moistened with the liquid.

On handling the casing

• If the casing is soiled, clean the camcorder body with a soft cloth lightly moistened with water, and then wipe the casing with a dry soft cloth.
• Avoid the following to avoid damage to the finish.
– Using chemicals such as thinner, benzine, alcohol, chemical cloths, repellent and insecticide.
– Handling with above substances on your hands.
– Leaving the casing in contact with rubber or vinyl objects for a long period of time.

About care and storage of the lens

• Wipe the surface of the lens clean with a soft cloth in the following instances:
– When there are fingerprints on the lens surface.
– In hot or humid locations
– When the lens is exposed to salty air such as at the seaside.
• Store in a well-ventilated location subject to little dirt or dust.
• To prevent molds periodically clean the lens as described above.

It is recommended you operate your camcorder about once a month to keep it in an optimum state for a long time.

To charge the pre-installed button-type battery

Your camcorder has a pre-installed button-type battery to retain the date, time, and other settings even when the POWER switch is set to (CHG) OFF. The pre-installed button-type battery is always charged while you are using your camcorder but it will get discharged gradually if you do not use your camcorder. The button-type battery will be fully discharged in about 3 months if you do not use your camcorder at all. However, even if the pre-installed button-type battery is not charged, the camcorder operation will not be affected as long as you are not recording the date.

Procedures

Connect your camcorder to a wall outlet using the supplied AC Adaptor, and leave it with the POWER switch set to (CHG) OFF for more than 24 hours.

Specification

Video camera recorder

System

Video recording system
For Hi8 TRV128/228/328/428:
2 rotary heads, Helical scanning FM system
For TRV260/265:
2 rotary heads, Helical scanning system

Audio recording system
For Hi8 TRV128/228/328/428:
Rotary heads, FM system
For TRV260/265:
Rotary heads, PCM system
Quantization: 12 bits (Fs 32 kHz, stereo 1, stereo 2), 16 bits (Fs 48 kHz, stereo)

Video signal
NTSC color, EIA standards

Usable cassette
8 mm video format cassette

Tape speed
For Hi8 TRV128/228/328/428:
SP: Approx. 14.35 mm/s
LP: Approx. 7.19 mm/s
For TRV260/265:
SP: Approx. 28.67 mm/s
LP: Approx. 19.11 mm/s

Recording/playback time (using 120 min. Hi8/ Digital8 video cassette)
For Hi8 TRV128/228/328/428:
SP: 2 h
LP: 4 h
For TRV260/265:
SP: 1 h
LP: 1 h 30 min

Fast forward/rewind time (using 120 min. Hi8/ Digital8 video cassette)
Approx. 5 min

Viewfinder
Electric viewfinder (monochrome)

Image device
For Hi8 TRV128/228/328/428:
3.0 mm (1/6 type) CCD (Charge Coupled Device)
Gross: Approx. 320 000 pixels
Effective: Approx. 200 000 pixels
For TRV260/265:
3.0 mm (1/6 type) CCD (Charge Coupled Device)
Gross: Approx. 460 000 pixels
Effective: Approx. 290 000 pixels

Lens
Combined power zoom lens
Filter diameter: 37 mm (1 1/2 in.)
20 × (Optical), 990 × (Digital)
F=1.6 - 2.4

Focal length
2.5 - 50 mm (1/8 - 2 in.)
When converted to a 35 mm still camera
42 - 840 mm (1 11/16 - 33 1/8 in.)

Color temperature
Auto

Minimum illumination
For Hi8 TRV128/228/328/428:
1 lx (lux) (F 1.6)
For TRV260/265:
4 lx (lux) (F 1.6)
0 lx (lux) (in the NightShot plus mode)*
* Objects unable to be seen due to the dark can be shot with infrared lighting.

Input/Output connectors

S video output
4-pin mini DIN
Luminance signal: 1 Vp-p, 75 Ω (ohms), unbalanced
Chrominance signal: 0.286 Vp-p, 75 Ω (ohms), unbalanced

Audio/Video output
AV MINIJACK
Video signal: 1 Vp-p, 75 Ω (ohms), unbalanced, sync negative
Audio signal: 327 mV (at output impedance more than 47 kΩ (kilohms)), Output impedance with less than 2.2 kΩ (kilohms)
For Hi8 TRV128/228/328/428:
Monaural minijack (ø 3.5 mm)
For TRV260/265:
Stereo minijack (ø 3.5 mm)

RFU DC OUT
For Hi8 TRV128/228/328/428:
Mini-minijack (ø 2.5 mm), DC5V

DV input/output
For TRV260/265:
4-pin connector

USB jack
For TRV260/265:
mini-B

LCD screen

Picture

6.2 cm (2.5 type)

Total dot number

123 200 (560 × 220)

General

Power requirements

DC 7.2 V (battery pack)
DC 8.4 V (AC Adaptor)

Average power consumption (when using the battery pack)

For Hi8 TRV128/228/328/428:
During camera recording using the viewfinder
1.8 W
During camera recording using the LCD
2.7 W
For TRV260/265:
During camera recording using viewfinder
2.5 W
During camera recording using LCD
3.4 W

Operating temperature

0°C to 40°C (32°F to 104°F)

Storage temperature

-20°C to + 60°C (-4°F to + 140°F)

Dimensions (approx.)

85 × 98 × 151 mm (3 3/8 × 3 7/8 × 6 in.) (w/h/d)

Mass (Approx.)

780 g (1 lb 11 oz) main unit only
890 g (1 lb 15 oz) including the NP-FM30 rechargeable battery pack, Hi8/Digital8 cassette, lens cap, and shoulder strap

Supplied accessories

See page 11.

AC Adaptor AC-L15A/L15B

Power requirements

AC 100 - 240 V, 50/60 Hz

Current consumption

0.35 - 0.18 A

Power consumption

18 W

Output voltage

DC 8.4 V, 1.5 A

Operating temperature

0°C to 40°C (32°F to 104°F)

Storage temperature

-20°C to + 60°C (-4°F to + 140°F)

Dimensions (approx.)

56 × 31 × 100 mm (2 1/4 × 1 1/4 × 4 in.) (w/h/d) excluding the projecting parts

Mass (approx.)

190 g (6.7 oz) excluding the power cord

Rechargeable battery pack (NP-FM30)

Maximum output voltage

DC 8.4 V

Output voltage

DC 7.2 V

Capacity

5.0 Wh (700 mAh)

Dimensions (approx.)

38.2 × 20.5 × 55.6 mm
(1 9/16 × 13/16 × 2 1/4 in.) (w/h/d)

Mass (approx.)

65 g (2.3 oz)

Operating temperature

0°C to 40°C (32°F to 104°F)

Type

Lithium ion

Design and specifications are subject to change without notice.

➡*continued*

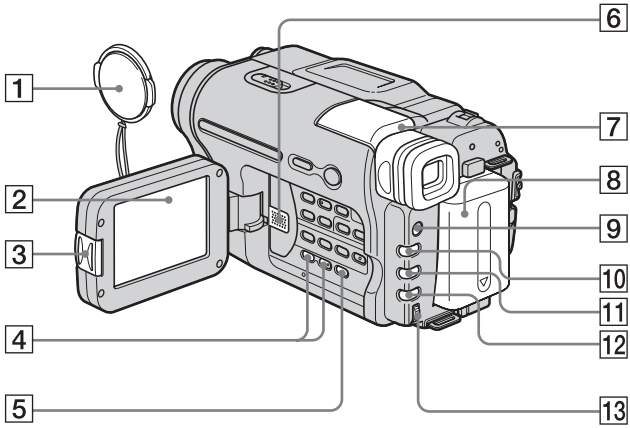
Types of differences

Model	video Hi8				Digital 8	
	CCD-				DCR-	
	TRV128	TRV228	TRV328	TRV428	TRV260	TRV265
Recording system	Hi8	Hi8	Hi8	Hi8	Digital8	Digital8
Playback system	Hi8/8	Hi8/8	Hi8/8	Hi8/8	Digital8	Digital8
Audio recording	Monaural	Monaural	Monaural	Monaural	Stereo	Stereo
AUDIO/VIDEO jack	OUT	OUT	OUT	OUT	OUT	OUT
S VIDEO jack	OUT	OUT	OUT	OUT	OUT	OUT
DV Interface	—	—	—	—	IN/OUT	IN/OUT
USB jack	—	—	—	—	●	●
SteadyShot	—	—	●	●	●	●
Remote sensor	—	●	—	●	—	●
RFU jack	●	●	●	●	—	—

● Provided
— Not provided

Identifying parts and controls

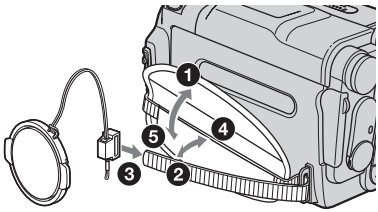
Camcorder



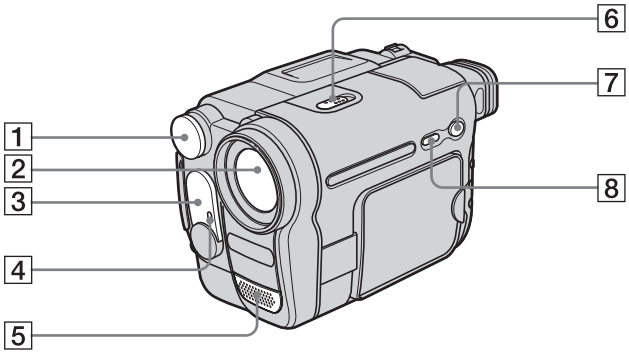
1 **Lens cap (p. 21, 25)**
2 **LCD screen (p. 3, 16)**
3 **OPEN button (p. 16)**
4 **VOLUME –/+* button (p. 34)**
5 **END SEARCH button (p. 33)**
6 **Speaker**
7 **Viewfinder (p. 3, 16)**
8 **Battery pack**
9 **LIGHT button (p. 23)**
10 **FADER button (p. 30)**
11 **BACK LIGHT button (p. 27)**
12 **FOCUS button (p. 29)**
13 **SEL/PUSH EXEC dial (p. 43)**

* This button has a tactile dot.

To attach the lens cap



➡*continued*



1 **Built-in light (p. 23)**

2 **Lens**

3 **Infrared ray emitter (p. 64, 70)/ For Hi8 TRV228/428/ TRV265: Remote sensor**

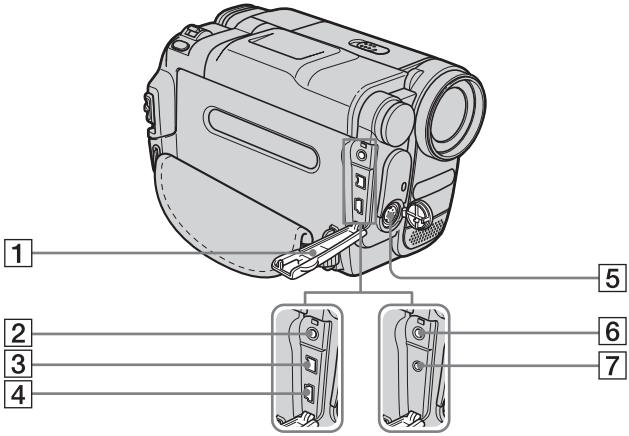
4 **Camera recording lamp (p. 21, 26)**

5 **Microphone**

6 **NIGHTSHOT PLUS switch (p. 28)**

7 **EASY button (p. 26, 36)**

8 **DSPL/BATT INFO button (p. 13, 37)**



1 **Jack cover**

2 **For TRV260/265: A/V OUT jack (p. 39, 62)**

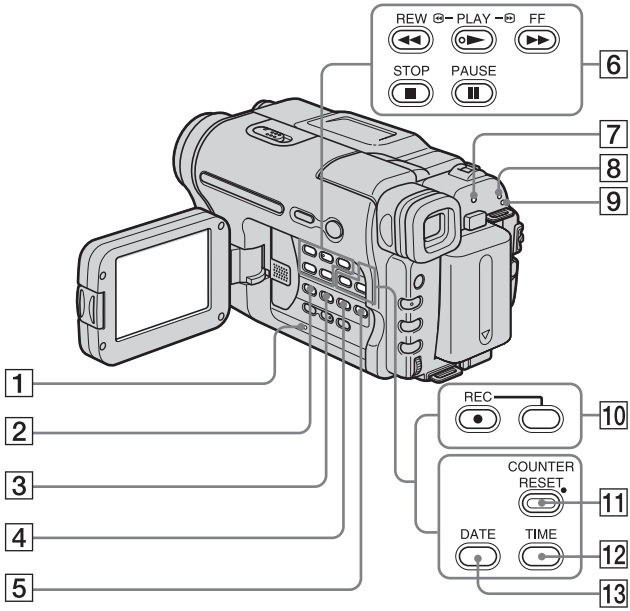
3 **For TRV260/265: DV Interface (p. 62)**

4 **For TRV260/265: (USB) jack**

5 **S VIDEO OUT jack (p. 39, 62)**

6 **For Hi8 TRV128/228/328/428: A/V OUT jack (p. 39, 61)**

7 **For Hi8 TRV128/228/328/428: RFU DC OUT jack (p. 40)**



1 **RESET button (p. 74)**

2 **For TRV260/265: BURN DVD/VCD**
You can easily take a picture recorded on the tape and burn it onto a DVD or CD-R. See the supplied "Computer Applications Guide" for details.
For Hi8 TRV128/228/328/428: EASY DUB (Easy Dubbing) button (p. 64)

3 **TITLE button (p. 31)**

4 **EXPOSURE button (p. 28)**

5 **MENU button* (p. 43)**

6 **Video control buttons (p. 34)**
- STOP (stop)
- REW (rewind)
- PLAY (playback)*
- FF (fast-forward)
- PAUSE (pause)

7 **CHG (charge) lamp (p. 12)**

8 **CAMERA mode lamps (p. 15)**

9 **PLAY/EDIT mode lamp (p. 15)**

10 **For TRV260/265: Rec buttons (p. 68)**
REC (rec)

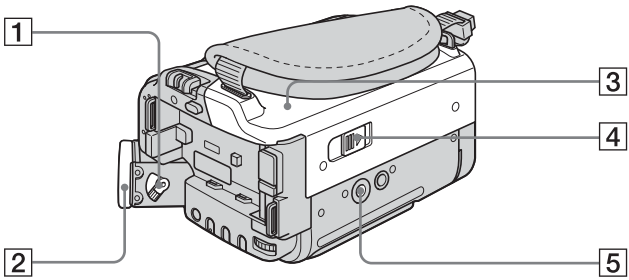
11 **For Hi8 TRV128/228/328/428: COUNTER RESET button (p. 22)**

12 **For Hi8 TRV128/228/328/428: TIME button (p. 18, 25)**

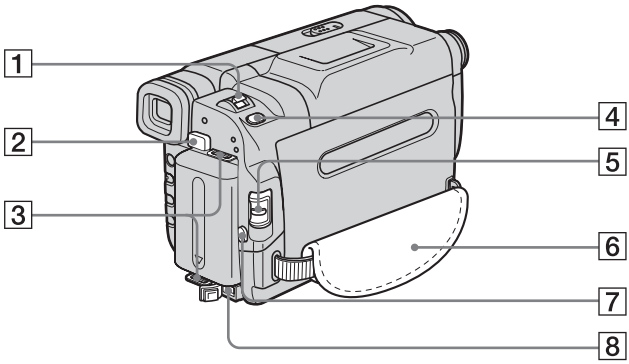
13 **For Hi8 TRV128/228/328/428: DATE button (p. 18, 25)**

* This button has a tactile dot.

➡*continued*



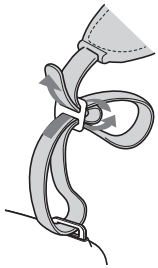
1 **Viewfinder lens adjustment lever (p. 16)**
2 **Eyecup**
3 **Cassette lid**
4 **OPEN/EJECT lever (p. 18)**
5 **Tripod receptacle**
Make sure that the length of the tripod screw is less than 5.5 mm (7/32 inch). Otherwise, you cannot attach the tripod securely, and the screw may damage your camcorder.



1 **Power zoom lever (p. 23)**
2 **BATT (battery) release button (p. 12)**
3 **Hooks for shoulder strap**
4 **For TRV260/265: PHOTO button (p. 25)**
5 **POWER switch (p. 15)**
6 **Grip belt (p. 4)**
7 **REC START/STOP button (p. 21)**
8 **DC IN jack (p. 12)**

To attaching the shoulder strap

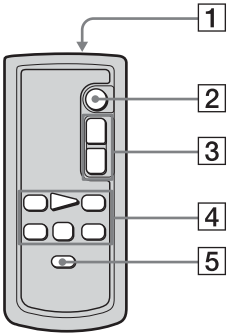
Attach the shoulder strap supplied with your camcorder to the hooks for the shoulder strap.



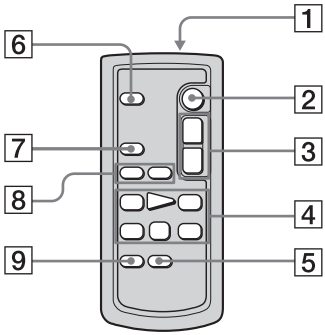
Remote Commander

Remove the insulation sheet before using the Remote Commander.

For Hi8 TRV228/428:



For TRV265:



1 **Transmitter**
After turning on your camcorder, point towards the remote sensor to control your camcorder.

2 **REC START/STOP button (p. 21)**

3 **Power zoom button (p. 23)**

4 **Video control buttons (Rewind, Playback, Fast-forward, Pause, Stop, Slow) (p. 34)**

5 **DISPLAY button (p. 37, 40)**

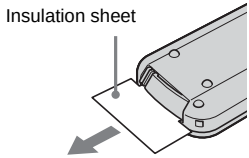
6 **PHOTO button (p. 25)**

7 **SEARCH M. button (p. 41, 42)**

8 **⏮/⏭ buttons (p. 41, 42)**

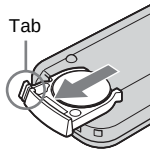
9 **ZERO SET MEMORY button (p. 40)**

To remove the insulation sheet

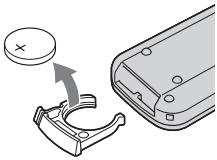


To change the button-type battery

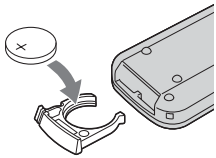
1 **While pressing on the tab, inset your fingernail into the slit to pull out the battery case.**



2 **Remove the button-type lithium battery.**



3 **Place a new button-type lithium battery with the + side facing up.**



4 **Insert the battery case back into the Remote Commander until it clicks.**

➡*continued*

WARNING

Battery may explode if mistreated. Do not recharge, disassemble or dispose of in fire.

CAUTION

Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type recommended by the manufacturer.
Discard used batteries according to the manufacturer's instructions.

Notes on the Remote Commander

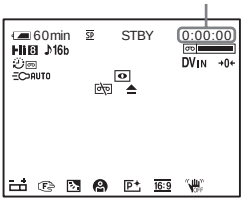
- A button-type lithium battery (CR2025) is used in the Remote Commander. Do not use batteries other than CR2025.
- Point the remote sensor away from strong light sources such as direct sunlight or overhead lighting. Otherwise, the Remote Commander may not function properly.
- When you are operating with the Remote Commander supplied with your camcorder, your VCR may also operate. In that case, select a commander mode other than VTR 2 for your VCR, or cover the sensor of your VCR with black paper.

Indicators for the LCD screen and viewfinder

Following indicators will appear on the LCD screen and viewfinder to indicate the state of your camcorder.
Indicators and their on-screen/viewfinder positions vary depending on your camcorder model.

Example: Indicators in the CAMERA mode

Time code (p. 22)/Tape counter (p. 22)/Self-diagnosis (p. 79)/Tape photo recording (p. 25)



Indicators	Meanings
60min	Remaining battery time (p. 22)
SP LP	Recording mode (p. 22)
STBY REC	Recording standby/ recording mode
	Mirror mode (p. 24)
	Tape photo recording (p. 25)
Hi8	Format indicator
♪16b	Audio mode (p. 54)
	Remaining tape (p. 22)
	Interval recording (p. 56)
	Frame recording (p. 55)
DV IN	DV input (p. 68)
→0←	Zero set memory (p. 40)
AUTO ON	Built-light (p. 23)
	NightShot plus (p. 28)

Indicators	Meanings
	Warning (p. 79)
	Manual exposure (p. 28)
	Manual focus (p. 29)
	Back light (p. 27)
	PROGRAM AE (p. 44)
P	Picture effect (p. 45)
16:9	16:9 WIDE/CINEMA/16:9 FULL (p. 48)
( )	SteadyShot off (p. 50)

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CCD-TRV128/TRV228/TRV228E/TRV328/TRV428/TRV428E
RMT-833

SONY

SERVICE MANUAL

Ver 1.1 2005.06

US Model
Canadian Model
CCD-TRV128/TRV328
AEP Model
East European Model
North European Model
CCD-TRV228E/TRV428E
UK Model
CCD-TRV228E
E Model
CCD-TRV128/TRV228/TRV228E/TRV328/TRV428E
Australian Model
Hong Kong Model
CCD-TRV428E
Argentine Model
Brazilian Model
CCD-TRV128
Tourist Model
CCD-TRV428/TRV428E

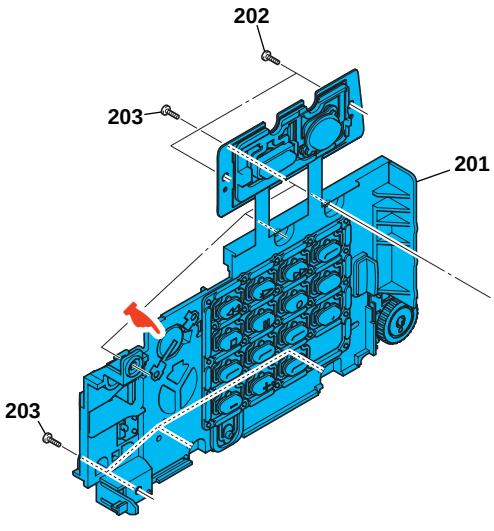
SUPPLEMENT-1

File this supplement with the service manual.
(PV05-004)

• Addition of repair parts

5-1. EXPLODED VIEWS
5-1-5. CABINET R BLOCK
(See original service manual page 5-6.)
☞ : Points changed portion.

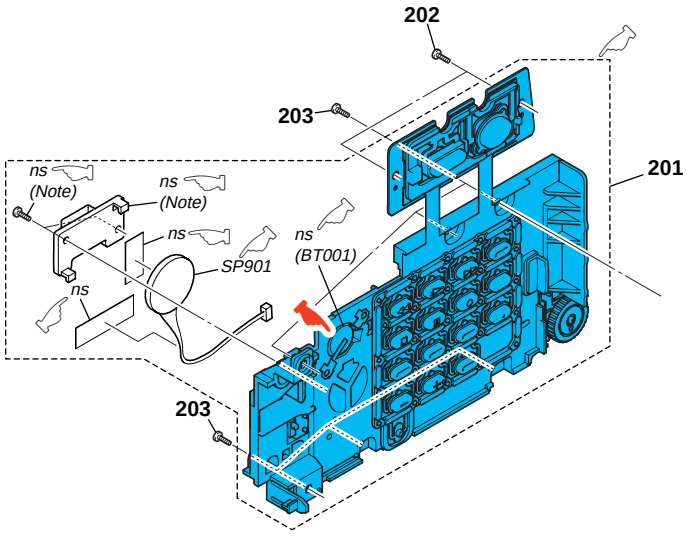
FORMER



☞ : *BT001 (BATTERY, LITHIUM SECONDARY) Included in the control switch block (CF-5100).*

Ref. No.	Part No.	Description

NEW



☞ : *BT001 (BATTERY, LITHIUM SECONDARY) Included in the control switch block (CF-5100).*

Note : Screw and speaker retainer plate in the Ref. No.201 (Control key block (CF-5100)) are not available as service parts. So be careful not to lose and break when change the SP901 (Loud speaker (1.6cm)).

Ref. No.	Part No.	Description
SP901	1-825-262-31	LOUD SPEAKER (1.6cm)

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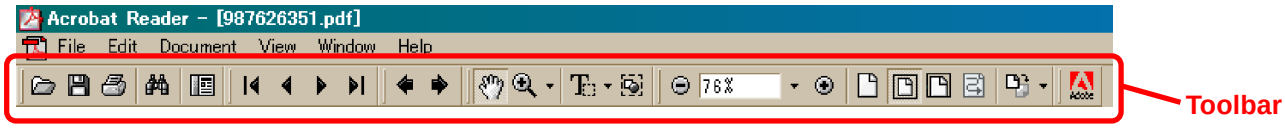
Published by DI Technical Support Department

[Description of main button functions on toolbar of the Adobe Acrobat Reader Ver5.0 (for Windows)]



Printing a text

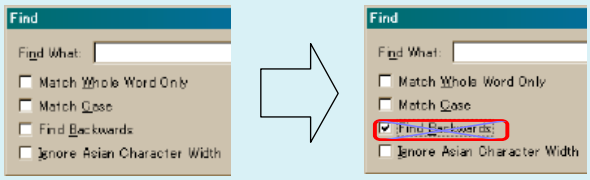
1. Click the Print button .
2. Specify a printer, print range, number of copies, and other options, and then click [OK].

Application of printing:
To set a range to be printed within a page, select the graphic selection tool and drag on the page to enclose a range to be printed, and then click the Print button.

Finding a text

1. Click the Find button .
2. Enter a character string to be found into a text box, and click the [Find]. (Specify the find options as necessary)

Application to the Service Manual:
To execute "find" from current page toward the previous pages, select the check box "Find Backward" and then click the "Find".



3. Open the find dialog box again, and click the [Find Again] and you can find the matched character strings displayed next. (Character strings entered previously are displayed as they are in the text box.)

Application to the Service Manual:
The parts on the drawing pages (block diagrams, circuit diagrams, printed circuit boards) and parts list pages in a text can be found using this find function. For example, find a Ref. No. of IC on the block diagram, and click the [Find Again] continuously, so that you can move to the Ref. No. of IC on the circuit diagram or printed circuit board diagram successively.
Note: The find function may not be applied to the Service Manual depending on the date of issue.

Switching a page

- To move to the first page, click the .
- To move to the last page, click the .
- To move to the previous page, click the .
- To move to the next page, click the .

Reversing the screens displayed once

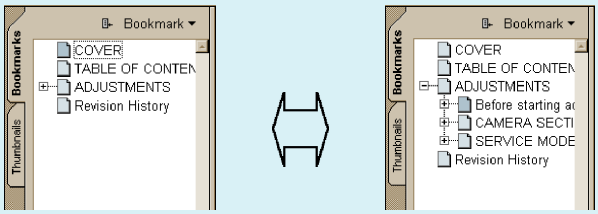
- To reverse the previous screens (operation) one by one, click the .
- To advance the reversed screens (operation) one by one, click the .

Application to the Service Manual:
This function allows you to go and back between circuit diagram and printed circuit board diagram, and accordingly it will be convenient for the voltage check.

Moving with link

1. Select either palm tool , zoom tool , text selection tool , or graphic selection tool .
2. Place the pointer in the position in a text where the link exists (such as a button on cover and the table of contents page, or blue characters on the removal flowchart page or drawing page), and the pointer will change to the forefinger form .
3. Then, click the link. (You will go to the link destination.)

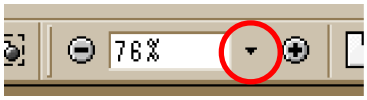
Moving with bookmark:
Click an item (text) on the bookmark pallet. and you can move to the link destination. Also, clicking can display the hidden items.
(To go back to original state, click)



Zooming or rotating the screen display

"Zoom in/out"

- Click the triangle button in the zoom control box to select the display magnification. Or, you may click or for zooming in or out.



"Rotate"

- Click rotate tool , and the page then rotates 90 degrees each.

Application to the Service Manual:
The printed circuit board diagram you see now can be changed to the same direction as the set.

Revision History

Ver.	Date	History	Contents	S.M. Rev. issued
1.0	2003.11	Official Release	—	—
1.1	2005.06	Supplement-1 (S1 PV05-004)	• Addition of repair parts	No

CCD-TRV128/TRV228/TRV228E/TRV328/TRV428/TRV428E
RMT-833

Ver 1.0 2003. 11
Revision History

SECTION 6
ADJUSTMENTS

ADJ

Link

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  - Adjusting items when replacing main parts and boards
- CAMERA SECTION ADJUSTMENTS
  - PREPARATIONS BEFORE ADJUSTMENTS
  - INITIALIZATION OF 8, A, C, D, E, F, 1F PAGE DATA
  - CAMERA SYSTEM ADJUSTMENTS
  - LCD SYSTEM ADJUSTMENTS
- MECHANISM SECTION ADJUSTMENTS
  - ADJUSTMENT REMOTE COMMANDER
  - OPERATING WITHOUT CASSETTE
  - TAPE PATH ADJUSTMENT
- VIDEO SECTION ADJUSTMENTS
  - PREPARATIONS BEFORE ADJUSTMENTS
  - SYSTEM CONTROL SYSTEM ADJUSTMENTS
  - SERVO SYSTEM ADJUSTMENTS
  - VIDEO SYSTEM ADJUSTMENTS
  - AUDIO SYSTEM ADJUSTMENTS
- SERVICE MODE
  - ADJUSTMENT REMOTE COMMANDER
  - DATA PROCESS
  - SERVICE MODE

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2003K0500-1

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The camera optical axis frame is shown on page 6-47.
The camera color reproduction frame is shown on page 6-48.

SECTION 6
ADJUSTMENTS

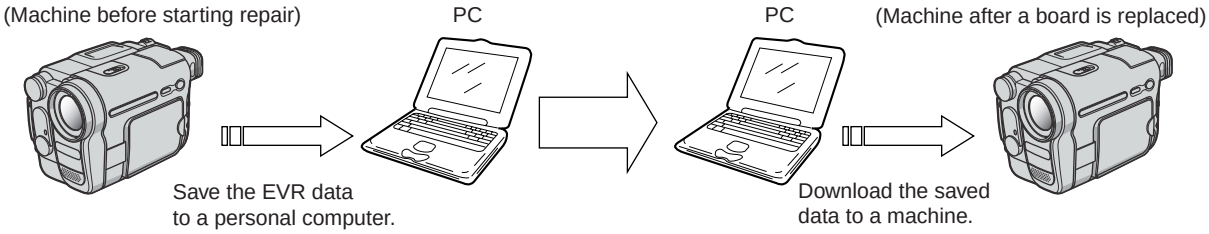
1. Before starting adjustments

EVR Data Re-writing Procedure When Replacing Board

The data that is stored in the repair board, is not necessarily correct.
Perform either procedure 1 or procedure 2 or procedure 3 when replacing board.

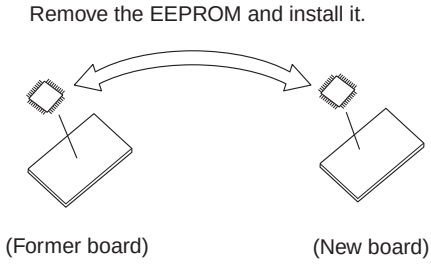
Procedure 1

Save the EVR data of the machine in which a board is going to be replaced. Download the saved data after a board is replaced.



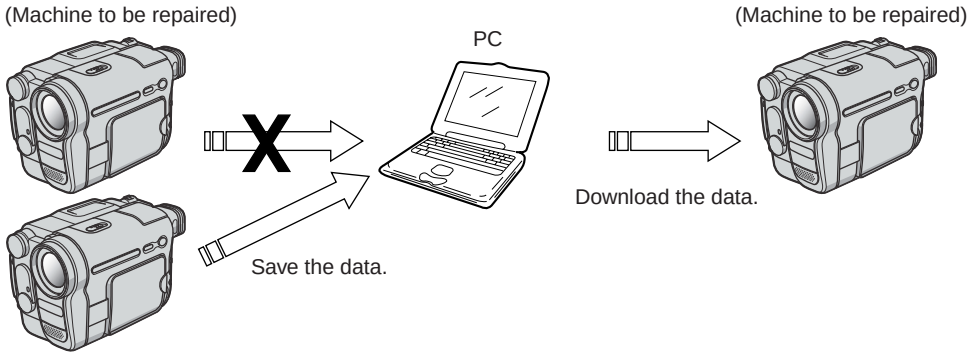
Procedure 2

Remove the EEPROM from the board of the machine that is going to be repaired. Install the removed EEPROM to the replaced board.



Procedure 3

When the data cannot be saved due to defective EEPROM, or when the EEPROM cannot be removed or installed, save the data from the same model of the same destination, and download it.



After the EVR data is saved and downloaded, check the respective items of the EVR data.
(Refer to page 6-3 for the items to be checked)

1-1. Adjusting items when replacing main parts and boards

• Adjusting items when replacing main parts

When replacing main parts, adjust the items indicated by ● in the following table.

Adjustment Section	Adjustment	Replaced part: Block replacement: Lens device	Video light (Note 2)	LCD block LCD901 (LCD panel)	LCD block ND901 (Fluorescent tube)	Mechanism deck (Note 1)	Mechanism deck M901 (Drum assembly) (Note 1)	Mechanism deck M902 (Capstan motor)	Mounted part replacement: CD-465 board IC951 (CCD imager)	SI-039 board SE751/752 (YAW, PITCH sensor) (Note 3)	VC-341 board IC151, X151 (Timing generator)	VC-341 board IC152 (S/H, AGC, A/D CONV.)	VC-341 board IC301 (Camera/VTR process, Lens control)	VC-341 board IC481 (REC/PB AMP)	VC-341 board IC251 (EVR)	VC-341 board IC801 (Audio/Video process)	PD-204 board IC6001 (LCD driver)
Initialization of 8, A, C, D, E, F, 1F page data	Initializing of 8, A, C, D, E, F, 1F page data																
Camera	HALL adj.	●															
	Flange back adj.	●							●								
	Optical axis adj.	●							●								
	Color reproduction adj.								●			●					
	LV standard data input								●			●					
	AWB standard data input								●			●					
	Auto white balance adj.								●			●					
	Angular velocity sensor output check and steadyshot check (Note 3)									●							
LCD	LCD level adj.																●
	LCD V-COM adj.			●													●
	LCD White balance adj.			●	●												●
Servo	CAP FG offset adj.					●		●									
	Switching position adj.					●	●										
Video	28 MHz origin osillation adj.										●				●		
	AFC f_0 adj.												●				
	S VIDEO OUT Y level adj.												●			●	
	S VIDEO OUT C level adj.												●			●	
	REC Y current adj.												●	●			
	REC C/AFM current adj.												●	●			
Audio	BPF f_0 adj.															●	
	1.5 MHz deviation adj.															●	
Mechanism	Tape path adj.					●	●	●									

Table 6-1-1 (1)

Note 1: When replacing the drum assy or mechanism deck, reset the data of page: 7, address: A4 to A6.
(Refer to “Record of Use Check” of “6-4. SERVICE MODE”)

Note 2: When replacing the video light, reset the data of page: 7, address: CE and CF.
(Refer to “Record of Use Check” of “6-4. SERVICE MODE”)

Note 3: CCD-TRV328/TRV428/TRV428E only

• Adjusting items when replacing a board or EEPROM

When replacing a board or EEPROM, adjust the items indicated by ● in the following table.

Adjustment Section	Adjustment	Replaced part: PD-204 board (COMPLETE)	Replaced part: VC-341 board (COMPLETE)	Replaced part: VC-341 board IC602 (EEPROM)	Supporting RadarW
Initialization of 8, A, C, D, E, F, 1F page data	Initializing of 8, A, C, D, E, F, 1F page data		●	●	
Camera	HALL adj.		●	●	●
	Flange back adj.		●	●	●
	Optical axis adj.		●	●	
	Color reproduction adj.		●	●	
	LV standard data input		●	●	●
	AWB standard data input		●	●	
	Auto white balance adj.		●	●	●
	Angular velocity sensor output check and steadyshot check (Note 3)		●	●	●
LCD	LCD level adj.	●	●	●	●
	LCD V-COM adj.	●	●	●	
	LCD White balance adj.	●	●	●	
Servo	CAP FG offset adj.		●	●	●
	Switching position adj.		●	●	
Video	28 MHz origin osillation adj.		●	●	
	AFC f_0 adj.		●	●	●
	S VIDEO OUT Y level adj.		●	●	
	S VIDEO OUT C level adj.		●	●	
	REC Y current adj.		●	●	
	REC C/AFM current adj.		●	●	
Audio	BPF f_0 adj.		●	●	
	1.5 MHz deviation adj.		●	●	
Mechanism	Tape path adj.				

Table 6-1-1 (2)

6-1. CAMERA SECTION ADJUSTMENTS

1-1. PREPARATIONS BEFORE ADJUSTMENTS (CAMERA SECTION)

1-1-1. List of Service Tools

- Oscilloscope
- Color monitor
- Vectorscope
- Regulated power supply
- Digital voltmeter
- Frequency counter

Ref. No.	Name	Parts Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	ND filter 1.0	J-6080-808-A	White balance check
	ND filter 0.4	J-6080-806-A	White balance check
	ND filter 0.1	J-6080-807-A	White balance check
J-3	Pattern box PTB-450	J-6082-200-A	
J-4	Color chart for pattern box	J-6020-250-A	
J-5	Adjustment remote commander (RM-95 upgraded). (Note)	J-6082-053-B	
J-6	Siemens star chart	J-6080-875-A	For checking the flange back
J-7	Clear chart for pattern box	J-6080-621-A	
J-8	CPC jig connector	J-6082-539-A	For connecting the adjustment remote commander
J-9	I/F unit for LANC control	J-6082-521-A	For connecting the adjustment remote commander
J-10	Mini pattern box	J-6082-353-B	For adjusting the flange back
J-11	Camera table	J-6082-384-A	For adjusting the flange back

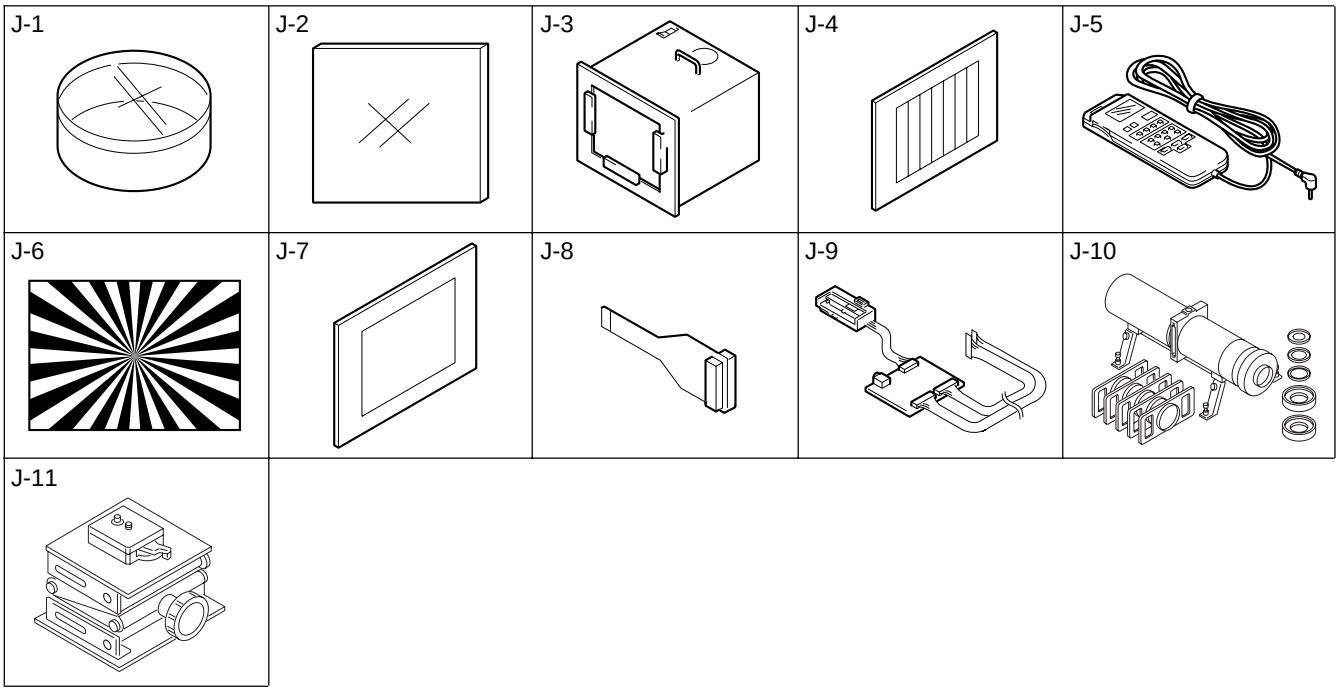


Fig. 6-1-1

1-1-2. Preparations

Note: Before perform the adjustment, check that the data of page: 0, address: 10 is “00”.
If not, select page: 0, address: 10, and set data “00”.

1) Connect the equipment for adjustments according to Fig. 6-1-3.
2) Connect the adjustment remote commander to VC-341 board CN007 via I/F unit for LANC control (J-6082-521-A) and CPC jig connector (J-6082-539-A). (Fig. 6-1-3)
To operate the adjustment remote commander, connect the AC power adaptor to the DC IN jack of I/F unit for LANC control, or connect the L series Info-LITHIUM battery to the battery terminal of I/F unit for LANC control.

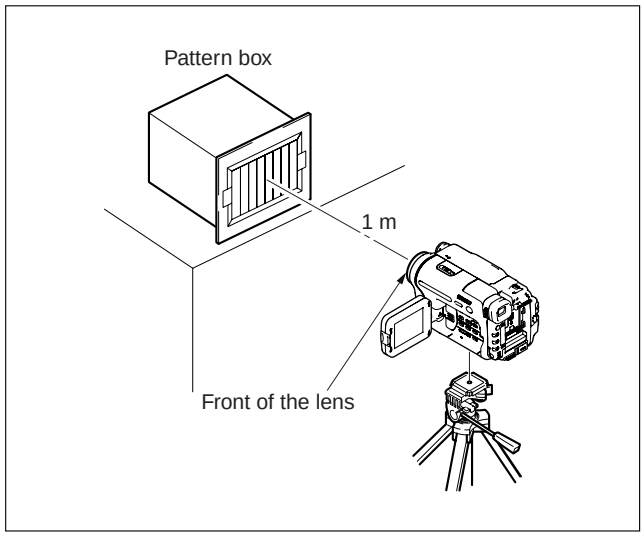


Fig. 6-1-2

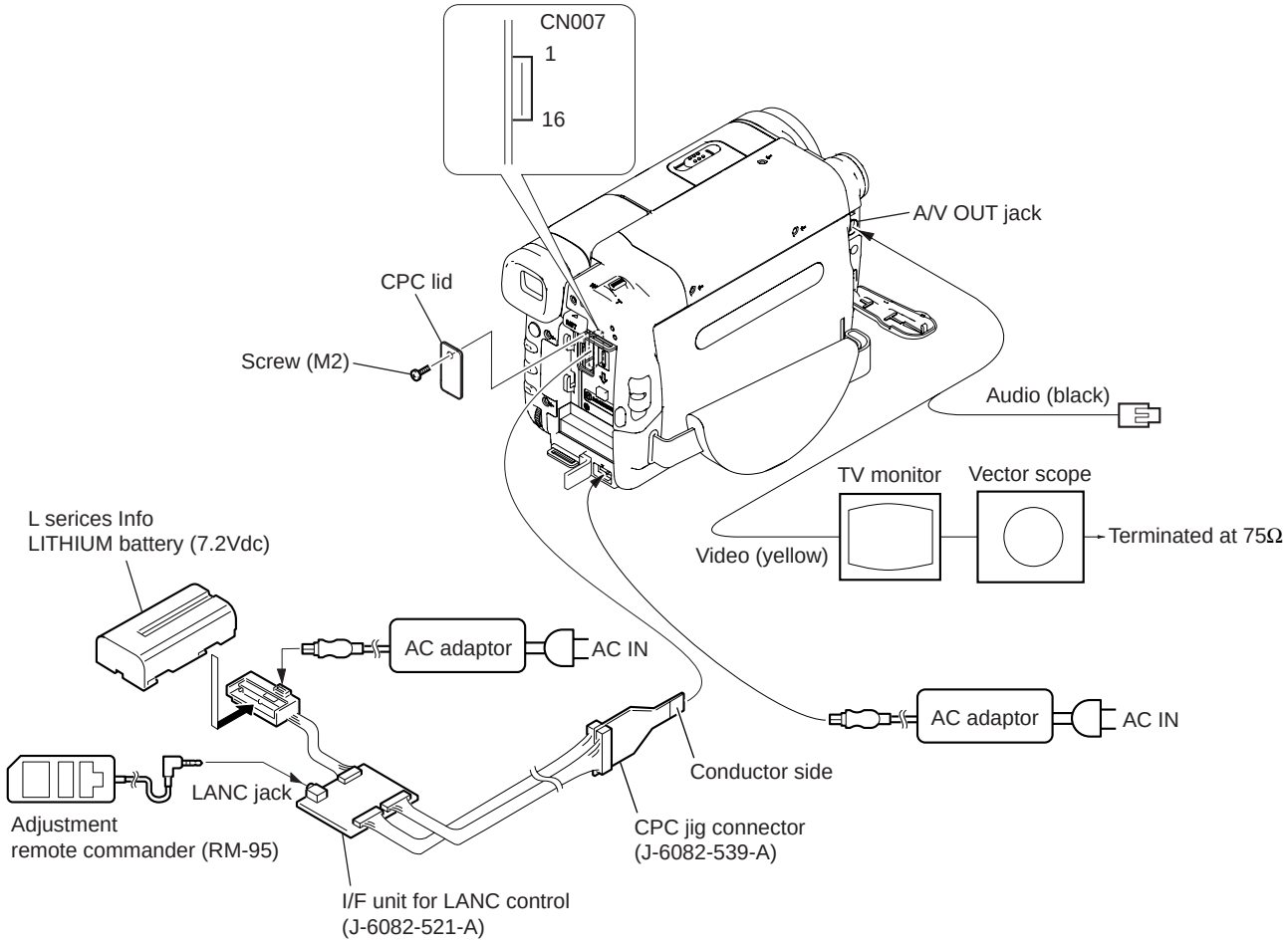


Fig. 6-1-3

1-1-3. Precaution

1. Setting the Switch

Unless otherwise specified, set the switches as follows and perform adjustments without loading cassette.

1. POWER switch (SS-5100 block) ..... CAMERA
2. FOCUS (CF-5100 block) ..... MANUAL
3. BACK LIGHT (CF-5100 block) ..... OFF
4. PROGRAM AE (MENU setting) ..... AUTO
5. NIGHTSHOT PLUS switch (Lens block) ..... OFF
6. EXPOSURE (CF-5100 block) ..... AUTO
7. P EFFECT (MENU setting) ..... OFF
8. D ZOOM (MENU setting) ..... OFF
9. DEMO MODE (MENU setting) ..... OFF
10. 16 : 9 WIDE (MENU setting) ..... OFF
11. DISPLAY (MENU setting) ..... LCD

2. Order of Adjustments

Basically carry out adjustments in the order given.

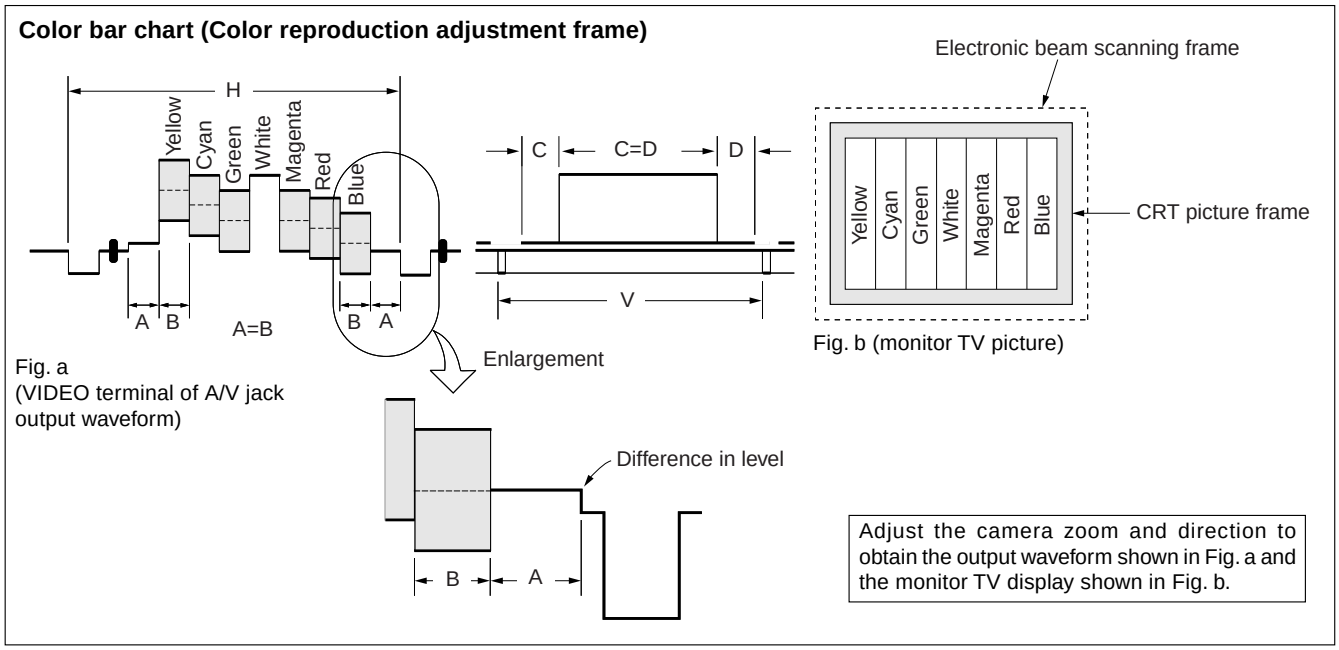


Fig. 6-1-4

3. Subjects

1) Color bar chart (Color reproduction adjustment frame)
   When performing adjustments using the color bar chart, adjust the picture frame as shown in Fig. 6-1-4. (Color reproduction adjustment frame)
2) Clear chart (Color reproduction adjustment frame)
   Remove the color bar chart from the pattern box and insert a clear chart in its place. (Do not perform zoom operations during this time)
3) Chart for flange back adjustment
   Join together a piece of white A0 size paper (1189mm × 841 mm) and a piece of black paper to make the chart shown in Fig. 6-1-5.

Note: Use a non-reflecting and non-glazing vellum paper. The size must be A0 or larger and the joint between the white and black paper must not have any undulations.

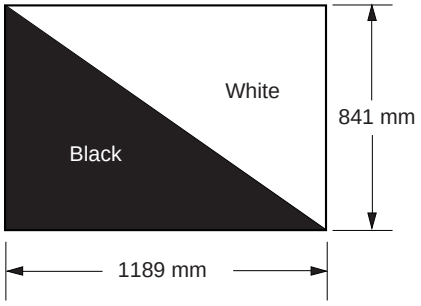


Fig. 6-1-5

1-2. INITIALIZATION OF 8, A, C, D, E, F, 1F PAGE DATA

Note: If reading/writing data on pages 1F, set data: 01 to page: 0, address: 10, and then select pages F. By this data setting, the pages 1F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

1. Initializing the 8, A, C, D, E, F, 1F Page Data

Note 1: If "Initialization of Pages 8, A, C, D, E, F, 1F" is executed, all data on pages 8, A, C, D, E, F, 1F are initialized. (Only an individual page cannot be initialized)

Note 2: If the 8, A, C, D, E, F, 1F page data has been initialized, "Modification of 8, A, C, D, E, F, 1F Page Data" and all adjustments need to be performed again.

Note 3: Check that the data of page: 0, address: 10 is "00".

Note 4: NTSC model: CCD-TRV128/TRV228/TRV328/TRV428
PAL model: CCD-TRV228E/TRV428E

Adjusting Page	8
Adjusting Address	00 to FF
Adjusting Page	A
Adjusting Address	10 to FF
Adjusting Page	C
Adjusting Address	10 to FF
Adjusting Page	D
Adjusting Address	10 to 7F
Adjusting Page	E
Adjusting Address	00 to FF
Adjusting Page	F
Adjusting Address	10 to FF
Adjusting Page	1F
Adjusting Address	00 to FF

Initializing method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	7	03		Set the following data. 00: NTSC model 80: PAL model
3	7	00		Set the following data. 2D: NTSC model 2F: PAL model
4	7	01		Set the following data, and press PAUSE button. 2D: NTSC model 2F: PAL model
5	7	02		Check the data changes to "01".
6	2	00	29	
7	2	01	29	Press PAUSE button.
8				Perform "Modification of 8, A, C, D, E, F, 1F Page Data"

2. Modification of 8, A, C, D, E, F, 1F Page Data

If the 8, A, C, D, E, F, 1F page data has been initialized, change the data of the "Fixed data-2" address shown in the following table by manual input.

Modifying method:

1) Before changing the data, select page: 0, address: 01, and set data: 01.
2) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.
   Note: If copy the data built in the different model, the camcorder may not operate.
3) When changing the data, press the PAUSE button of the adjustment remote commander each time when setting new data to write the data in the non-volatile memory.
4) Check that the data of adjustment addresses is the initial value. If not, change the data to the initial value.

Processing after Completing Modification of 8, A, C, D, E, F, 1F Page data

Order	Page	Address	Data	Procedure
1	2	00	29	
2	2	01	29	Press PAUSE button.

Note: If the following symptoms occur after completing of the "Modification of 8, A, C, D, E, F, 1F page data", check that the data of the "Fixed data-2" addresses of 8, A, C, D, E, F, 1F page are same as those of the same model of the same destination.
1) The power is shut off so that unit cannot operate.

3. 8 Page table

Note 1: Check that the data of page: 0, address: 10 is "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the 8, A, C, D, E, F, 1F Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of 8, A, C, D, E, F, 1F Page Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

4. A Page table

Note 1: Check that the data of page: 0, address: 10 is “00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the 8, A, C, D, E, F, 1F Page Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of 8, A, C, D, E, F, 1F Page Data”)

Address	Initial value		Remark
	NTSC	PAL	
10 to 20	Fixed data-1 (Initialized data)		
21	Fixed data-2		
22 to 2B	Fixed data-1 (Initialized data)		
2C	Fixed data-2		
2D to 30	Fixed data-1 (Initialized data)		
31	Fixed data-2		
32 to 40	Fixed data-1 (Initialized data)		
41	Fixed data-2		
42 to 44	Fixed data-1 (Initialized data)		
45	Fixed data-2		
46 to 4B	Fixed data-1 (Initialized data)		
4C	Fixed data-2		
4D	Fixed data-1 (Initialized data)		
4E	Fixed data-2		
4F			
50, 51	Fixed data-1 (Initialized data)		
52	Fixed data-2		
53			
54 to 64	Fixed data-1 (Initialized data)		
65	Fixed data-2		
66 to 7F	Fixed data-1 (Initialized data)		
80	Fixed data-2		
81			
82 to 8F	Fixed data-1 (Initialized data)		
90	Fixed data-2		
91 to 95	Fixed data-1 (Initialized data)		
96	Fixed data-2		
97			
98			
99 to 9C	Fixed data-1 (Initialized data)		
9D	Fixed data-2		
9E			
9F			
A0			
A1 to DF	Fixed data-1 (Initialized data)		
E0	Fixed data-2		
E1			
E2			
E3			
E4			
E5			
E6			
E7			
E8			
E9	Fixed data-2		
EA			
EB			
EC			
ED			
EE			
EF			
F0			
F1			
F2			
F3			
F4			
F5			
F6			
F7			
F8			
F9			
FA			
FB			
FC			
FD			
FE, FF	Fixed data-1 (Initialized data)		

5. C Page table

Note 1: Check that the data of page: 0, address: 10 is “00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the 8, A, C, D, E, F, 1F Page Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of 8, A, C, D, E, F, 1F Page Data”)

Address	Initial value		Remark
	NTSC	PAL	
10 to 13			Fixed data-1 (Initialized data)
14	00	00	Test mode
15			Fixed data-1 (Initialized data)
16	0B	0A	Switching position adj.
17	00	00	
18	83	83	CAP FG offset adj.
19	30	30	AFC f_0 adj.
1A	68	62	S VIDEO OUT Y level adj.
1B	62	62	S VIDEO OUT C level adj.
1C, 1D			Fixed data-1 (Initialized data)
1E	B4	D7	REC Y current adj.
1F	B4	D7	
20 to 24			Fixed data-1 (Initialized data)
25	A0	A0	REC C/AFM current adj.
26 to 2E			Fixed data-1 (Initialized data)
2F	A6	A6	1.5 MHz deviation adj.
30	80	80	BPF f_0 adj.
31 to 4F			Fixed data-1 (Initialized data)
50	67	79	LCD level adj. (VCO adj.)
51	79	67	
52	84	84	LCD V-COM adj.
53 to 55			Fixed data-1 (Initialized data)
56	87	87	LCD White balance adj.
57	68	68	
58	AF	AF	LCD level adj. (Contrast adj.)
59 to 5B			Fixed data-1 (Initialized data)
5C			Fixed data-2
5D			
5E to C0			Fixed data-1 (Initialized data)
C1			Fixed data-2
C2 to F3			Fixed data-1 (Initialized data)
F4	00	00	Emergency memory
F5	00	00	
F6	00	00	
F7	00	00	
F8	00	00	
F9	00	00	
FA	00	00	
FB	00	00	
FC	00	00	
FD	00	00	
FE	00	00	
FF	00	00	

6. D Page Table

Note 1: Check that the data of page: 0, address: 10 is “00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the 8, A, C, D, E, F, 1F Page Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of 8, A, C, D, E, F, 1F Page Data”)

Address	Initial value		Remark
	NTSC	PAL	
10	00	00	Test mode
11			Fixed data-1 (Initialized data)
12			Fixed data-2
13			
14 to 21			Fixed data-1 (Initialized data)
22			Fixed data-2
23			
24			
25			
26			
27 to 29			Fixed data-1 (Initialized data)
2A			Fixed data-2
2B			
2C to 35			Fixed data-1 (Initialized data)
36			Fixed data-2
37			
38			
39			Fixed data-1 (Initialized data)
3A			Fixed data-2
3B to 55			Fixed data-1 (Initialized data)
56			Fixed data-2
57			Fixed data-1 (Initialized data)
58			Fixed data-2
59			
5A to 6E			Fixed data-1 (Initialized data)
6F			Fixed data-2
70 to 7F			Fixed data-1 (Initialized data)

7. E Page Table

Note 1: Check that the data of page: 0, address: 10 is “00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the 8, A, C, D, E, F, 1F Page Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of 8, A, C, D, E, F, 1F Page Data”)

Address	Initial value		Remark
	NTSC	PAL	
00 to 0F	Fixed data-1 (Initialized data)		
10	Fixed data-2		
11 to B0	Fixed data-1 (Initialized data)		
B1	Fixed data-2		
B2	Fixed data-1 (Initialized data)		
B3	Fixed data-2		
B4, B5	Fixed data-1 (Initialized data)		
B6	Fixed data-2		
B7	Fixed data-1 (Initialized data)		
B8	Fixed data-2		
B9 to BF	Fixed data-1 (Initialized data)		
C0	Fixed data-2		
C1 to FF	Fixed data-1 (Initialized data)		

8. F Page Table

Note 1: Check that the data of page: 0, address: 10 is "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the 8, A, C, D, E, F, 1F Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of 8, A, C, D, E, F, 1F Page Data")

Address	Initial value		Remark
	NTSC	PAL	
10	80	80	28 MHz origin osillation adj.
11			Fixed data-1 (Initialized data)
12	4A	4A	Hall adj.
13	56	56	
14	11	11	
15	20	20	
16	02	02	
17	E0	E0	
18, 19			Fixed data-1 (Initialized data)
1A	00	00	LV standard data input
1B	60	60	
1C to 29			Fixed data-1 (Initialized data)
2A	1B	1B	Auto white balance standard data input
2B	00	00	
2C	07	07	
2D	00	00	
2E	0E	0E	Auto white balance adj.
2F	00	00	
30	0D	0D	
31	00	00	
32			Fixed data-1 (Initialized data)
33	22	22	Color reproduction adj.
34			Fixed data-1 (Initialized data)
35	27	24	Color reproduction adj.
36 to 39			Fixed data-1 (Initialized data)
3A	00	00	Color reproduction adj.
3B	F1	EF	
3C, 3D			Fixed data-1 (Initialized data)
3E	29	2A	Auto white balance adj.
3F	80	C0	
40	58	5A	
41	C0	C0	
42, 43			Fixed data-1 (Initialized data)
44	28	28	Flange back adj.
45	EC	EC	
46	35	35	
47	8F	8F	
48	13	13	
49	B8	B8	
4A	00	00	
4B	00	00	
4C	00	00	
4D	00	00	
4E	2B	2B	
4F	19	19	
50	00	00	
51	32	32	Flange back adj.
52	04	04	
53	00	00	
54	00	00	
55 to 57			Fixed data-1 (Initialized data)
58			Fixed data-2
59			
5A	FF	FF	Optical axis adj.
5B to 8D			Fixed data-1 (Initialized data)
8E			Fixed data-2
8F			
90			
91 to 96			Fixed data-1 (Initialized data)
97			Fixed data-2
98 to A5			Fixed data-1 (Initialized data)
A6			Fixed data-2
A7 to AC			Fixed data-1 (Initialized data)
AD			Fixed data-2
AE			
AF			
B0			
B1 to C4			Fixed data-1 (Initialized data)
C5			Fixed data-2
C6			
C7 to E0			Fixed data-1 (Initialized data)
E1			Fixed data-2
E2 to EA			Fixed data-1 (Initialized data)
EB			Fixed data-2
EC to EE			Fixed data-1 (Initialized data)
EF			Fixed data-2
F0 to FF			Fixed data-1 (Initialized data)

9. 1F Page table

Note 1: If reading/writing data on pages 1F, set data: 01 to page: 0, address: 10, and then select pages F. By this data setting, the pages 1F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the 8, A, C, D, E, F, 1F Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of 8, A, C, D, E, F, 1F Page Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to 1D			Fixed data-1 (Initialized data)
1E			Fixed data-2
1F to FF			Fixed data-1 (Initialized data)

1-3. CAMERA SYSTEM ADJUSTMENTS

Before perform the camera system adjustments, check that the specified values of "28 MHz Origin Oscillation Adjustment", "S VIDEO OUT Y level Adjustment" and "S VIDEO OUT C level Adjustment" of "VIDEO SYSTEM ADJUSTMENT" are satisfied.
Check that the data of page: 0, address: 10, is "00".
If not, select page: 0, address: 10, and set data "00"

1. HALL Adjustment RadarW

For detecting the position of lens iris, adjust the hall AMP gain and offset.

Mode	CAMERA
Subject	Not required
Measurement Point	Displayed data of page: 1 (Note 3)
Measuring Instrument	Adjusting remote commander
Adjustment Page	F
Adjustment Address	12 to 17
Specified value	87 to 8B during IRIS OPEN 15 to 19 during IRIS CLOSE

Note 1: Check that the data of page: 0, address: 10 is "00".
Note 2: Check that the data of page: 6, address: 02 is "00".
If not, turn the power of unit OFF/ON.
Note 3: The right two digits of the page: 1 displayed data of the adjusting remote commander.

1:00:XX
└── Displayed data

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	94	89	
3	6	95	17	
4	6	01	6D	Press PAUSE button. (Note 4)
5	6	02		Check the data changes to "01".
6	6	01	00	Press PAUSE button.

Note 4: The adjustment data will be automatically input to page: F, address: 12 to 17.

Checking method:

Order	Page	Address	Data	Procedure
1	0	03	03	
2	6	01	01	Press PAUSE button.
3	1			Check that the displayed data (Note 3) during IRIS OPEN satisfied the specified value.
4	6	01	03	Press PAUSE button.
5	1			Check that the displayed data (Note 3) during IRIS CLOSE satisfied the specified value.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	6	94	00	
3	6	95	00	
4	0	03	00	
5	0	01	00	

2. Flange Back Adjustment RadarW (Using the minipattern box)

The inner focus lens flange back adjustment is carried out automatically. In whichever case, the focus will be deviated during auto focusing/manual focusing.

Mode	CAMERA
Subject	Siemens star chart with ND filter for minipattern box (Note 1)
Measurement Point	Check operation on monitor TV
Measuring Instrument	
Adjustment Page	F
Adjustment Address	44 to 54

Note 1: Dark Siemens star chart.
Note 2: Check that the data of page: 0, address: 10 is "00".
Note 3: Check that the data of page: 6, address: 02 is "00". If not, turn the power of unit OFF/ON.
Note 4: Perform the adjustment with the camcorder in horizontal state.
Note 5: Perform "HALL Adjustment" before this adjustment.

Switch setting:

1) NIGHTSHOT PLUS ..... OFF
2) DISPLAY (Menu setting) ..... LCD

Preparations before adjustments:

1) The minipattern box is installed as shown in the following figure.
   Note 6: The attachment lenses are not used.
2) Install the minipattern box so that the distance between it and the front of lens of camcorder is less than 3 cm.
3) Make the height of minipattern box and the camera equal.
4) Check the output voltage of the regulated power supply is the specified voltage ± 0.01 Vdc.
5) Check that the center of Siemens star chart meets the center of shot image screen with the zoom lens at TELE end and WIDE end respectively.

Specified voltage: The specified voltage varies according to the minipattern box, so adjust the power supply output voltage to the specified voltage written on the sheet which is supplied with the minipattern box.

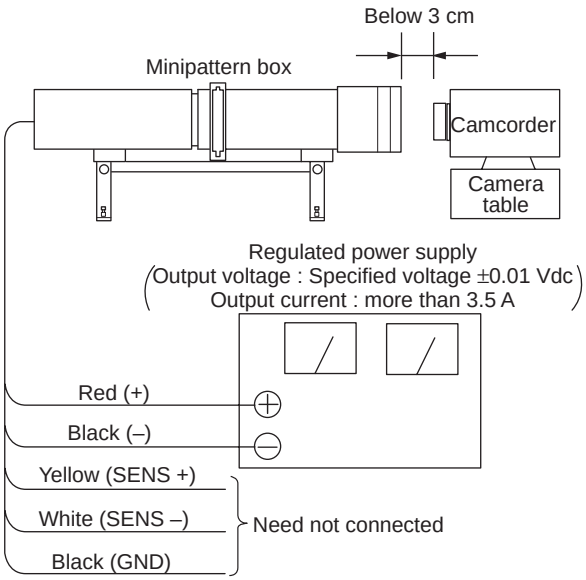


Fig. 6-1-6

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	48	01	
3	6	01	13	Press PAUSE button.
4	6	01	27	Press PAUSE button. (Note 7)
5	6	02		Check the data changes to "01".

Note 7: The adjustment data will be automatically input to page: F, address: 44 to 54.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	6	01	25	Press PAUSE button.
3	6	01	00	Press PAUSE button.
4	6	48	00	
5	0	01	00	
6				Perform "Flange Back Check".

3. Flange Back Adjustment (Using the flange back adjustment chart and subject more than 500 m away)

The inner focus lens flange back adjustment is carried out automatically. In whichever case, the focus will be deviated during auto focusing/manual focusing.

3-1. Flange Back Adjustment (1) RadarW

Mode	CAMERA
Subject	Flange back adjustment chart (2.0 m from the front of lens) (Luminance: 300 to 400 lux)
Measurement Point	Check operation on monitor TV
Measuring Instrument	
Adjustment Page	F
Adjustment Address	44 to 54

Note 1: Check that the data of page: 0, address: 10 is "00".
Note 2: Check that the data of page: 6, address: 02 is "00". If not, turn the power of unit OFF/ON.
Note 3: Perform the adjustment with the camcorder in horizontal state.
Note 4: Perform "HALL Adjustment" before this adjustment.

Switch setting:

1) NIGHTSHOT PLUS ..... OFF
2) DISPLAY (Menu setting) ..... LCD

Preparations before adjustments:

1) Place the Flange back adjustment chart 2.0 m from the front of the lens.
2) Check that the center of Flange back adjustment chart meets the center of shot image screen with the zoom lens at TELE end and WIDE end respectively.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	48	01	
3	6	01	13	Press PAUSE button.
4	6	01	15	Press PAUSE button. (Note 5)
5	6	02		Check the data changes to "01".

Note 5: The adjustment data will be automatically input to page: F, address: 44 to 54.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	6	01	25	Press PAUSE button.
3	6	01	00	Press PAUSE button.
4	6	48	00	
5	0	01	00	
6				Perform "Flange Back Adjustment (2)".

3-2. Flange Back Adjustment (2) RadarW

Perform this adjustment after performing "Flange Back Adjustment (1)".

Mode	CAMERA
Subject	Subject more than 500 m away (Subject with clear contrast such as buildings, etc.)
Measurement Point	Check operation on monitor TV
Measuring Instrument	
Adjustment Page	F
Adjustment Address	44 to 54

Note 1: Check that the data of page: 0, address: 10 is "00".
Note 2: Check that the data of page: 6, address: 02 is "00". If not, turn the power of unit OFF/ON.

Switch setting:

1) NIGHTSHOT PLUS ..... OFF
2) DISPLAY (Menu setting) ..... LCD

Preparations before adjustments:

1) Set the zoom lens to the TELE end and expose a subject that is more than 500 m away.
(subjects with clear contrast such as building, etc.)
(Nearby subjects less than 500 m away should not be in the screen)

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	48	01	
3	6	01	13	Press PAUSE button.
4				Place ND filter on the lens so that the optimum image is obtain.
5	6	01	29	Press PAUSE button. (Note 3)
6	6	02		Check the data changes to "01".

Note 3: The adjustment data will be automatically input to page: F, address: 44 to 54.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	6	01	25	Press PAUSE button.
3	6	01	00	Press PAUSE button.
4	6	48	00	
5	0	01	00	
6				Perform "Flange Back Check".

4. Flange Back Check

Mode	CAMERA
Subject	Siemens star (2.0 m from the front of the lens) (Luminance: approx. 200 lux)
Measurement Point	Check operation on monitor TV
Measuring Instrument	
Specified value	Focused at the TELE end and WIDE end

Note 1: Check that the data of page: 0, address: 10 is “00”.

Switch setting:

1) NIGHTSHOT PLUS ..... OFF
2) DISPLAY (Menu setting) ..... LCD

Note 2: When the auto focus is ON, the lens can be checked if it is focused or not by observing the data on the page: 1 of the adjusting remote commander.

1 : 00 : XX
- Odd: Focused
- Even: Unfocused

Checking method:

Order	Page	Address	Data	Procedure
1				Place the Siemens star 2.0 m from the front of the lens.
2				To open the IRIS, decrease the luminous intensity to the Siemens star up to a point before noise appear on the image.
3	6	40	01	
4	6	41	01	
5				Shoot the Siemens star with the zoom TELE end.
6				Turn on the auto focus.
7	0	03	0F	
8	1			Check that the lens is focused. (Note 2)
9	6	21	10	
10				Shoot the Siemens star with the zoom WIDE end.
11				Observe the TV monitor and check that the lens is focused.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	21	00	
2	6	40	00	
3	6	41	00	
4	0	03	00	

5. Optical Axis Adjustment

Correct a deviation of optical axis between the lens and the CCD imager.

If deviated, the screen center will be shifted when the lens is zoomed from TELE end to WIDE end.

Subject	Siemens Star
Measurement Point	Check operation on monitor TV
Measuring Instrument	
Adjustment Page	F
Adjustment Address	5A

Note 1: Check that the data of page: 0, address: 10 is "00".
Note 2: "Flange Back Adjustment" must be already finished.

Switch setting:

1) DIGITAL ZOOM (Menu setting) ..... OFF
2) STEADYSHOT (Menu setting)
   (CCD-TRV328/TRV428/TRV428E only) ..... OFF
3) DISPLAY (Menu setting) ..... LCD

Preparation for adjustment:

1) Play a monoscope portion of the System Check tape (WR5-5NSP (NTSC) or WR5-5CSP (PAL)).
2) Stick the optical axis deviation specification frame to the monitor screen so that the center of monoscope coincides with the center of specification frame.
3) Select the CAMERA mode.

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: F, address: 5A, and set data: 00, then press the PAUSE button on the adjusting remote commander.
3) Place the Siemens Star at 2 m position away from the lens.
4) Shoot the Siemens Star with the zoom at TELE end.
5) Change the lens direction so that the center of Siemens Star coincides with the center of optical axis deviation specification frame.
6) Shoot the Siemens Star with the zoom at WIDE end.
7) Check on the monitor TV which area the center of Siemens Star exists of the optical axis deviation specification frame.
   At this time, measure the amount of deviation "L1" (distance from the center of Siemens Star to the center of optical axis deviation specification frame).
8) From the following table, read correction data according to the area.

Area	Deviation Phase	Correction Data
1	22.6° to 67.5°	01
2	67.6° to 112.5°	02
3	112.6° to 157.5°	03
4	157.6° to 202.5°	04
5	202.6° to 247.5°	05
6	247.6° to 292.5°	06
7	292.6° to 337.5°	07
8	337.6° to 22.5°	08

9) Select page: F, address: 5A, and set correction data, then press the PAUSE button on the adjusting remote commander.
10) Shoot the Siemens Star with the zoom at TELE end.
11) Change the lens direction so that the center of Siemens Star coincides with the center of optical axis deviation specification frame.
12) Shoot the Siemens Star with the zoom at WIDE end.
13) Measure the amount of deviation "L2" (distance from the center of Siemens Star to the center of optical axis deviation specification frame).
14) Compare L1 and L2, and make sure that the L2 is smaller than L1.
    If large, select page: F, address: 5A, and set data: 00, then press the PAUSE button on the adjusting remote commander.

Processing after completion of adjustment:

1) Select page: 0, address: 01, and set data: 00.

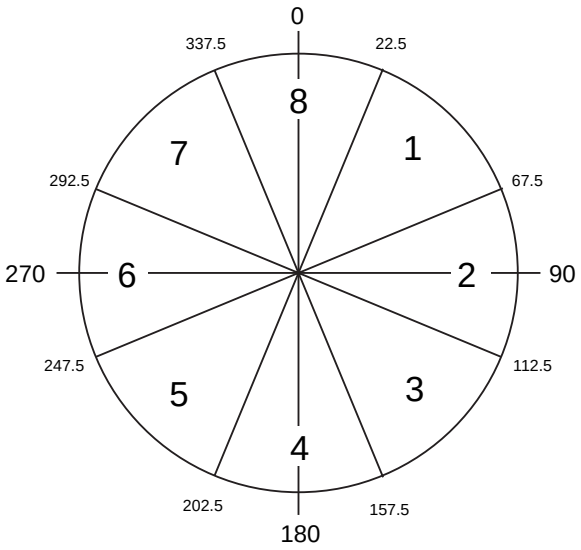


Fig. 6-1-7

6. Picture Frame Setting

Mode	CAMERA
Subject	Color bar chart (Color reproduction adjustment frame) (1.0 m from the front of lens)
Measurement Point	Video terminal of A/V OUT jack (75 Ω terminated)
Measuring Instrument	Oscilloscope and monitor TV
Specified Value	A=B, C=D, E=F

Note 1: Check that the data of page: 0, address: 10 is "00".
Note 2: Perform "Flange Back Adjustment" and "Optical Axis Adjustment" before this adjustment.

Switch setting:
1) DIGITAL ZOOM (Menu setting) ..... OFF
2) STEADYSHOT (Menu setting)
(CCD-TRV328/TRV428/TRV428E only) ..... OFF
3) DISPLAY (Menu setting) ..... LCD

Setting method:
1) Select page: 6, address: 48, and set data: 01.
2) Adjust the zoom and the camera direction, and set to the specified position.
3) Mark the position of the picture frame on the monitor display, and adjust the picture frame to this position in following adjustments using "Color reproduction adjustment frame".

Processing after Completing Camera System Adjustments:
1) Select page: 6, address: 48, and set data: 00.

Check on the oscilloscope

1. Horizontal period

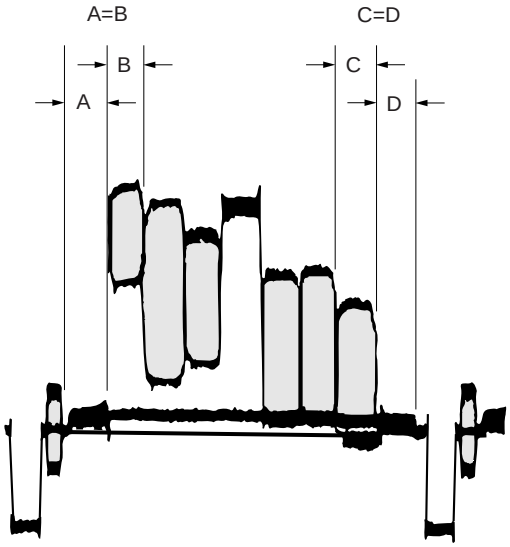


Fig. 6-1-8

2. Vertical period

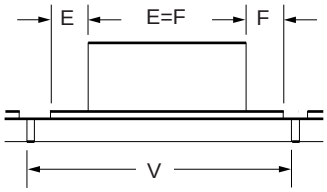


Fig. 6-1-9

Check on the monitor TV (Underscanned mode)

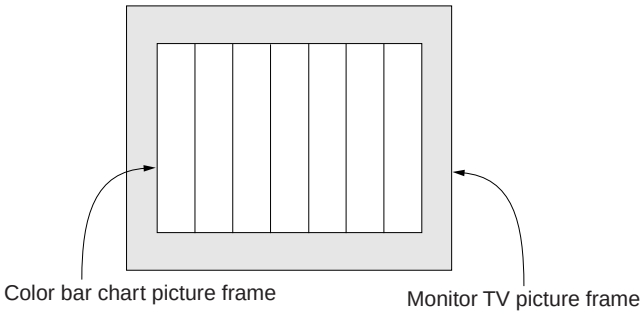


Fig. 6-1-10

7. Color Reproduction Adjustment

Adjust the color separation matrix coefficient so that proper color reproduction is produced.

Mode	CAMERA
Subject	Color bar chart (Color reproduction adjustment frame)
Measurement Point	Video terminal of A/V OUT jack (75 Ω terminated)
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	33, 35, 3A, 3B
Specified Value	All color luminance points should settle within each color reproduction frame.

Note 1: Check that the data of page: 0, address: 10 is "00".
Note 2: Perform "Flange Back Adjustment" before this adjustment.
Note 3: NTSC model: CCD-TRV128/TRV228/TRV328/TRV428
PAL model: CCD-TRV228E/TRV428E

Switch setting:

1) NIGHTSHOT PLUS ..... OFF
2) DIGITAL ZOOM (Menu setting) ..... OFF
3) STEADYSHOT (Menu setting)
(CCD-TRV328/TRV428/TRV428E only) ..... OFF
4) DISPLAY (Menu setting) ..... LCD

Adjusting method:

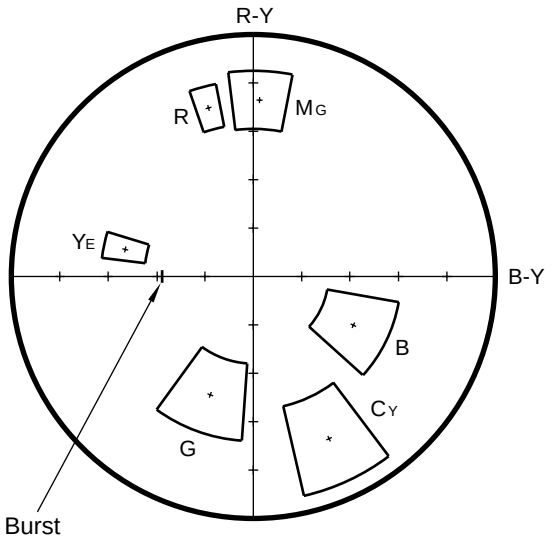
Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	48	01	
3	6	9D		Set the following data. 68: NTSC model 67: PAL model
4	6	01	3D	Press PAUSE button.
5	F	80		Set the following data, and press PAUSE button. 37: NTSC model B7: PAL model
6				Adjust the GAIN and PHASE of the vectorscope, and set to the burst luminance point to the burst position of color reproduction frame.
7	F	33 35 3A 3B		Change the data and settle each color luminance point in each color reproduction frame. (Note 4)

Note 4: Be sure to press the PAUSE button of the adjusting remote commander before changing the addresses. If not, the new data will not be written to the memory.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	6	48	00	
3	6	9D	00	
4	0	01	00	

NTSC model



PAL model

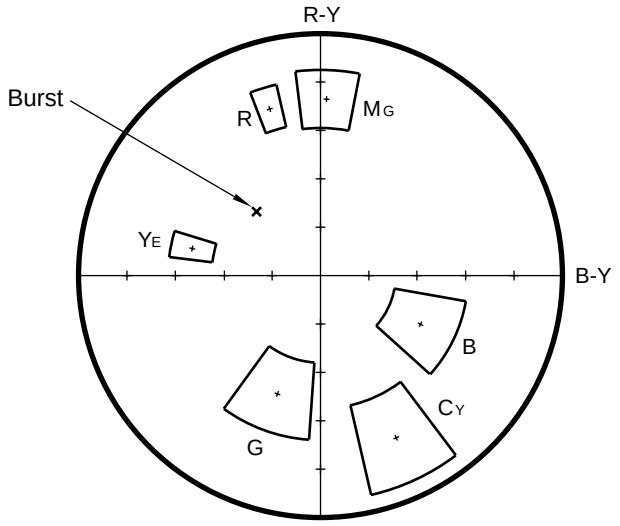


Fig. 6-1-11

8. LV Standard Data Input RadarW

Adjust the normal coefficient of the light value.

Mode	CAMERA
Subject	Clear chart (Color reproduction adjustment frame)
Measurement Point	Displayed data of page: 1 (Note 4)
Measuring Instrument	Adjusting remote commander
Adjustment Page	F
Adjustment Address	1A, 1B
Specified Value	0FE0 to 1020

Note 1: Perform "Flange Back Adjustment" before this adjustment.
Note 2: Check that the data of page: 0, address: 10 is "00".
Note 3: Check that the data of page: 6, address: 02 is "00".
If not, turn the power of unit OFF/ON.
Note 4: The right four digits of the page: 1 displayed data of the adjusting remote commander.

1:XX:XX
└── Displayed data

Switch setting:

1) NIGHTSHOT PLUS ..... OFF
2) DIGITAL ZOOM (Menu setting) ..... OFF
3) STEADYSHOT (Menu setting)
(CCD-TRV328/TRV428/TRV428E only) ..... OFF
4) DISPLAY (Menu setting) ..... LCD

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	48	01	
3	6	01	0D	Press PAUSE button. (Note 5)
4	6	02		Check the data changes to "01".
5	0	03	1E	
6	1			Check that the displayed data (Note 4) satisfied specified value.

Note 5: The adjustment data will be automatically input to page: F, address: 1A and 1B.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	6	48	00	
3	0	03	00	
4	0	01	00	

9. Auto White Balance Standard Data Input

Adjust the white balance reference at 3200K.

Mode	CAMERA
Subject	Clear chart (Color reproduction adjustment frame)
Adjustment Page	F
Adjustment Address	2A to 2D

Note 1: Perform "Color Reproduction Adjustment" before this adjustment.
Note 2: Check that the data of page: 0, address: 10 is "00".
Note 3: Check that the data of page: 6, address: 02 is "00".
If not, turn the power of unit OFF/ON.

Switch setting:

1) NIGHTSHOT PLUS ..... OFF
2) DIGITAL ZOOM (Menu setting) ..... OFF
3) STEADYSHOT (Menu setting)
(CCD-TRV328/TRV428/TRV428E only) ..... OFF
4) DISPLAY (Menu setting) ..... LCD

Preparations before adjustments:

Before performing the "Auto White Balance Standard Data Input", check the data of page: 3, address: FF.
If the data is 01, perform the work after turning on the power by the following method.

1) Turn the power off once, if the data of page: 3, address: FF is 01.
2) Turn on the power of the set with the HOLD switch on the adjustment remote commander left on the NOR side.
3) Change over the HOLD switch on the adjustment remote commander to the ADJ side.
4) Execute the "Auto White Balance Standard Data Input"

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	48	01	
3	6	01	11	Press PAUSE button.
4	6	01	0B	Press PAUSE button. (Note 4)
5	6	02		Check the data changes to "01".

Note 4: The adjustment data will be automatically input to page: F, address: 2A to 2D.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	6	48	00	
3	0	01	00	

10. Auto White Balance Adjustment RadarW

Adjust to the proper auto white balance output data.
If it is not correct, auto white balance and color reproducibility will be poor.

Mode	CAMERA
Subject	Clear chart (Color reproduction adjustment frame)
Filter	Filter C14 for color temperature correction
Adjustment Page	F
Adjustment Address	2E to 31, 3E to 41

Note 1: Perform “Auto White Balance Standard Data Input” before this adjustment.
Note 2: Check that the data of page: 0, address: 10 is “00”.
Note 3: Check that the data of page: 6, address: 02 is “00”. If not, turn the power of unit OFF/ON.
Note 4: NTSC model: CCD-TRV128/TRV228/TRV328/TRV428
PAL model: CCD-TRV228E/TRV428E

Switch setting:

1) NIGHTSHOT PLUS ..... OFF
2) DIGITAL ZOOM (Menu setting) ..... OFF
3) STEADYSHOT (Menu setting)
(CCD-TRV328/TRV428/TRV428E only) ..... OFF
4) DISPLAY (Menu setting) ..... LCD

Adjusting method:

Order	Page	Address	Data	Procedure
1				Place the C14 filter on the lens.
2	0	01	01	
3	6	48	01	
4	F	3E	2C	Press PAUSE button.
5	F	3F		Set the following data, and press PAUSE button. 80: NTSC model 40: PAL model
6	F	40		Set the following data, and press PAUSE button. 58: NTSC model 59: PAL model
7	F	41		Set the following data, and press PAUSE button. 10: NTSC model C0: PAL model
8	6	01	83	Press PAUSE button.
9	6	01	81	Press PAUSE button. (Note 5)
10	6	02		Check the data changes to “01”.

Note 5: The adjustment data will be automatically input to page: F, address: 2E to 31.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	6	48	00	
3	0	01	00	
4				Remove the C14 filter on the lens.

11. Auto White Balance Check RadarW

Mode	CAMERA	
Subject	Clear chart (Color reproduction adjustment frame)	
Filter	Filter C14 for color temperature correction ND filter 1.0, 0.4 and 0.1	
Measurement Point	Video terminal of A/V OUT jack (75 Ω terminated)	Displayed data of page: 1 (Note 3)
Measuring Instrument	Vectorscope	Adjusting remote commander
Specified Value	Fig. 6-1-12 (A) and (B)	NTSC model R ratio: 2C40 to 2CC0 B ratio: 57D0 to 5850 InOut data: 8000 to 8BC0
		PAL model R ratio: 2C00 to 2C80 B ratio: 5980 to 5A00 InOut data: 8000 to 8BC0

Note 1: Check that the data of page: 0, address: 10 is "00".

Note 2: Perform "Auto White Balance Adjustment" before this adjustment.

Note 3: The right four digits of the page: 1 displayed data of the adjusting remote commander.

1:XX:XX
Displayed data

Note 4: NTSC model: CCD-TRV128/TRV228/TRV328/TRV428
PAL model: CCD-TRV228E/TRV428E

Switch setting:

1) NIGHTSHOT PLUS ..... OFF
2) DIGITAL ZOOM (Menu setting) ..... OFF
3) STEADYSHOT (Menu setting)
(CCD-TRV328/TRV428/TRV428E only) ..... OFF
4) DISPLAY (Menu setting) ..... LCD

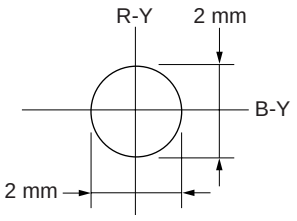


Fig. 6-1-12 (A)

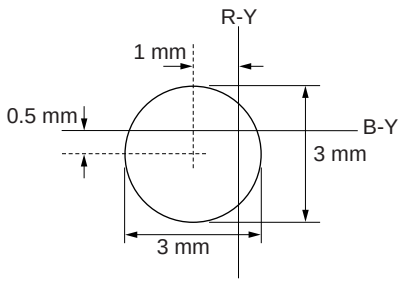


Fig. 6-1-12 (B)

Checking method:

Order	Page	Address	Data	Procedure
1				Check that the lens is not covered with either filter.
2	6	48	01	
INDOOR check				
3	6	01	0F	Press PAUSE button.
4				Check that the center of the white luminance point within the circle shown Fig. 6-1-12 (A)
5	6	01	00	Press PAUSE button.
OUTDOOR check				
6				Place the C14 filter on the lens.
7	6	01	3F	Press PAUSE button.
8				Check that the center of the white luminance point within the circle shown Fig. 6-1-12 (B)
9	0	03	04	
10	1			Check that the displayed data (Note 3) satisfied the R ratio specified value.
11	0	03	05	
12	1			Check that the displayed data (Note 3) satisfied the B ratio specified value.
13				Remove the C14 filter
InOut data check				
14				Place the ND filter 1.5 (1.0 + 0.4 + 0.1) on the lens.
15	6	01	00	Press PAUSE button.
16	0	03	06	
17	1			Check that the displayed data (Note 3) satisfied the InOut data specified value.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	6	48	00	
3	0	03	00	
4				Remove the ND filter 1.5 (1.0 + 0.4 + 0.1) on the lens.

12. Angular Velocity Sensor Output Check and Steadyshot Check (CCD-TRV328/TRV428/TRV428E) RadarW

Check the angular velocity sensor output.

Precautions on the Parts Replacement

There are two types of repair parts.

Type A ENC03JA
Type B ENC03JB

Replace the broken sensor with a same type sensor. If replace with other type parts, the image will vibrate up and down or left and right during hand-shake correction operations.

Precautions on Angular Velocity Sensor

The sensor incorporates a precision oscillator. Handle it with care as if it dropped, the balance of the oscillator will be disrupted and operations will not be performed properly.

Mode	CAMERA
Subject	Not required
Measurement Point	Displayed data of page: 1 (Note 2)
Measuring Instrument	Adjusting remote commander
Specified value	PITCH data: 2680 to 5080 YAW data: 2680 to 5080

Note 1: Check that the data of page: 0, address: 10 is “00”.

Note 2: The right four digits of the page: 1 displayed data of the adjusting remote commander.

1:XX:XX
└── Displayed data

Switch setting:

1) ZOOM ..... TELE end
2) STEADYSHOT (Menu setting) ..... ON

Checking method:

Order	Page	Address	Data	Procedure
PITCH sensor output check (SE752 of SI-039 board)				
1	0	03	11	
2	1			With the set in still state, check that the displayed data (Note 2) satisfies the PITCH data specified value.
YAW sensor output check (SE751 of SI-039 board)				
3	0	03	12	
4	1			With the set in still state, check that the displayed data (Note 2) satisfies the YAW data specified value.
5	0	03	00	
Steadyshot operation check				
6				Shake the set vertically and horizontally to check that the steadyshot function operates normally.

13. CCD Defect Check RadarW

Mode	CAMERA
Subject	Not required
Measurement Point	Check on the monitor TV
Measuring Instrument	

Note: Check that the data of page: 0, address: 10 is “00”.

Checking method:

Order	Page	Address	Data	Procedure
1	6	01	05	Press PAUSE button.
2	6	1F	CC	
3	6	40	03	
4				Check on the monitor screen that no defect is found.
5	6	40	04	
6				Check on the monitor screen that no defect is found.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	6	40	00	
3	6	1F	00	

1-4. LCD SYSTEM ADJUSTMENTS

Before perform the LCD system adjustments, check that the data of page: 0, address: 10 is “00”.
If not, select page: 0, address: 10, and set the data “00”.

Note 1: The back light (fluorescent tube) is driven by a high voltage AC power supply. Therefore, do not touch the back light holder to avoid electrical shock.
Note 2: When replacing the LCD unit, be careful to prevent damages caused by static electricity.
Note 3: Set the LCD BRIGHT (Menu setting) to the center.
Set the LCD B.L. (Menu setting) to the BRIGHT.
Set the LCD COLOR (Menu setting) to the center.
Note 4: Open the LCD panel during the LCD system adjustment.

1. LCD Level Adjustment (PD-204 board) RadarW

This adjustment does the following items automatically.
VCO Adjustment
Contrast Adjustment

Mode	VTR stop (PLAY/EDIT mode)
Signal	No signal
Adjustment Page	C
Adjustment Address	50, 51 (VCO Adjustment) 58 (Contrast Adjustment)

Note 1: Check that the data of page: 0, address: 10 is “00”.
Note 2: NTSC model: CCD-TRV128/TRV228/TRV328/TRV428
PAL model: CCD-TRV228E/TRV428E

Adjusting method: (NTSC model)

Order	Page	Address	Data	Procedure
1	0	01	01	
2	3	01	5A	Press PAUSE button. (Note 3)
3	3	02		Check the data changes to “00”.
4	3	03		Check that the data is “00”. (Note 4)
5	0	01	00	

Adjusting method: (PAL model)

Order	Page	Address	Data	Procedure
1	0	01	01	
2	3	01	5A	Press PAUSE button. (Note 3)
3	3	02		Check the data changes to “00”.
4	3	03		Check that the data is “00”. (Note 4)
5	C	50		Read the data and this data is named D_{50}.
6				Convert D_{50} to decimal notation, and obtain D_{50}’. (Note 5)
7				Calculate D_{51}’ using following equations. (decimal calculation) $D_{51}' = D_{50}' - 18$
8				Convert D_{51}’ to a hexadecimal number, and obtain D_{51}. (Note 5, 6)
9	C	51	D_{51}	Press PAUSE button.
10	0	01	00	

Note 3: The adjustment data will be automatically input to page: C, address: 50, 51 and 58.
Note 4: If the data is other than “00”, adjustment has errors. For the error contents, see the following table.
Note 5: Refer to table 6-4-1. “Hexadecimal-decimal conversion table”.
Note 6: If $D_{51}' < 0$, then $D_{51} = 00$

Page	Address	Data	Error contents
3	03	01	Adjustment time out.
	C6	60	Contrast adjustment error
		62	VCO adjustment error

2. LCD V-COM Adjustment (PD-204 board)

Set the DC bias of the common electrode drive signal of LCD to the specified value.
If deviated, the LCD display will be move, producing flicker and conspicuous vertical lines.

Mode	VTR stop (PLAY/EDIT mode)
Signal	No signal
Measurement Point	Check on LCD screen
Measuring Instrument	
Adjustment Page	C
Adjustment Address	52
Specified Value	The brightness difference between the section-A and section-B is minimum

Note 1: Perform "LCD Level Adjustment" before this adjustment.
Note 2: Check that the data of page: 0, address: 10 is "00".

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	C	52		Change the data so that brightness of the section A and section B is equal.
3	C	52		Subtract 8 from the data.
4	C	52		Press PAUSE button.
5	0	01	00	

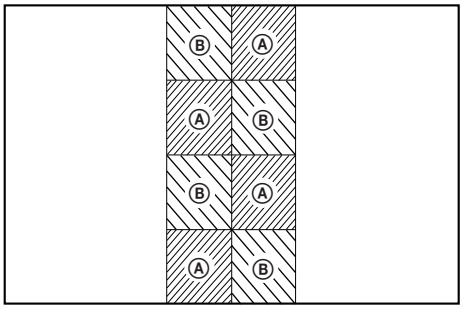


Fig. 6-1-13

3. LCD White Balance Adjustment (PD-204 board)

Correct the white balance.
If deviated, the LCD screen color cannot be reproduced.

Mode	VTR stop (PLAY/EDIT mode)
Signal	No signal
Measurement Point	Check on LCD screen
Measuring Instrument	
Adjustment Page	C
Adjustment Address	56, 57
Specified Value	LCD screen must not be colored

Note 1: Check that the data of page: 0, address: 10 is "00".
Note 2: Check the white balance only when replacing the following parts. If necessary, adjust them.
1. LCD panel
2. Light induction plate
3. IC6001

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	C	56	87	Press PAUSE button.
3	C	57	68	Press PAUSE button.
4				Check that the LCD screen is not colored. If not colored, proceed to step 6.
5	C	56 57		Change the data so that the LCD screen is not colored. (Note 3)
6	0	01	00	

Note 3: To write in the non-volatile memory (EEPROM), press the PAUSE button each time to set the data.

6-2. MECHANISM SECTION ADJUSTMENTS

Mechanism Section adjustments, checks, and replacement of mechanism parts, refer to the separate volume "8mm Video Mechanism Adjustment Manual IX M2000 Mechanism ".

Note: Before perform the adjustments, check that the data of page: 0, address: 10 is "00".
If not, select page: 0, address: 10, and set the data "00".

2-1. ADJUSTMENT REMOTE COMMANDER

Connect the adjustment remote commander to CN007 of VC-341 board via I/F unit for LANC control (J-6082-521-A) and CPC jig connector (J-6082-539-A). To operate the adjustment remote commander, connect the AC power adapter (8.4Vdc) to the DC IN jack of I/F unit for LANC control, or connect the L series Info-LITHIUM battery to the battery terminal of I/F unit for LANC control.

2-2. OPERATING WITHOUT CASSETTE

1) Refer to "Section 2. DISASSEMBLY" and supply the power with the cabinet assembly removed. (So that the mechanical deck can be operated.)
2) Connect the adjustment remote commander.
3) Turn on the HOLD switch of the adjustment remote commander.
4) Close the cassette compartment without loading a cassette and complete loading.
5) Select page: 0, address: 01, and set data: 01.
6) Select page: C, address: 14, set data: 01, and press the PAUSE button of the adjustment remote commander.
7) Select page: D, address: 10, set data: 02, and press the PAUSE button of the adjustment remote commander.
8) Select page: A, address: 10, set data: 10, and press the PAUSE button of the adjustment remote commander.
9) Select page: 7, address: 10, set data: 02, and press the PAUSE button of the adjustment remote commander.
10) Disconnect the power supply of the unit.
By carrying out the above procedure, the unit can be operated without loading a cassette.
Be sure to carry out "Processing after Operations" after checking the operations.
Set the data of page: A, address: 10 to the following if the sensor ineffective mode, forced VTR power supply On mode or forced camera power supply ON mode are to be used together.
Forced VTR power ON mode 12
Forced camera power ON mode 11

[Procedure after checking operations]

1) Select page: 0, address: 01, and set data: 01.
2) Select page: C, address: 14, set data: 00, and press the PAUSE button of the adjustment remote commander.
3) Select page: D, address: 10, set data: 00, and press the PAUSE button of the adjustment remote commander.
4) Select page: D, address: 10, set data: 00, and press the PAUSE button of the adjustment remote commander.
5) Select page: 7, address: 10, set data: E2, and press the PAUSE button of the adjustment remote commander.
6) Select page: 0, address: 01, and set data: 00.
7) Disconnect the power supply of the unit.

2-3. TAPE PATH ADJUSTMENT

1. Preparations for Adjustment

1) Clean the tape path face (tape guide, capstan shaft, pinch roller).
2) Connect the adjustment remote commander.
3) Turn on the HOLD switch of the adjustment remote commander.
4) Select page: 0, address: 01, and set data: 01.
5) Select page: C, address: 14, set data: 08, and press the PAUSE button of the adjustment remote commander.
(Be sure to perform "Processing after operation" after completing adjustments.)
6) Connect the oscilloscope to I/F unit for LANC control.
Channel 1: PB RF (Pin ⑨ of CN007)
Channel 2 (Trigger): SWP (Pin ⑤ of CN007)
7) Playback the alignment tape for tracking. (WR5-1NP (NTSC), WR5-1CP (PAL))
8) Check that the oscilloscope RF waveform is normal at the entrance and exit.
If not normal, adjust according to the separate volume "8mm Video Mechanical Adjustment Manual IX M2000 Mechanism ".
9) Perform "Processing after operations", after completing adjustment.

Test point of I/F unit for LANC control

Pin No.	Signal Name	Pin No.	Signal Name
	BL	15	EVF VCO
14	EVF VG		BL 4.75
9	PB RF (MON)		
3	BPF MONI	6, 8 ,10	GND
	TMS	7	REC RF (RF IN)
	TDI		TDO
5	SWP		TCK
4	CAP FG	2	IR VIDEO

Note: Pin No. are those of CN007.

Table 6-2-1.

[Procedure after operations]

1) Connect the adjustment remote commander, and turn on the HOLD switch.
2) Select page: 0, address: 01, and set data: 01.
3) Select page: C, address: 14, set data: 00, and press the PAUSE button of the adjustment remote commander.
4) Select page: 0, address: 01, and set data: 00.
5) Remove the power supply from the unit.

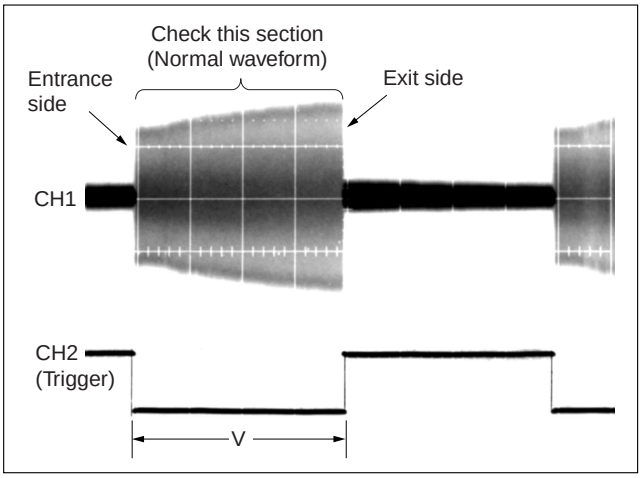


Fig. 6-2-1.

6-3. VIDEO SECTION ADJUSTMENTS

3-1. PREPARATIONS BEFORE ADJUSTMENTS

Use the following measuring instruments for video section adjustments.

Note: NTSC model: CCD-TRV128/TRV228/TRV328/TRV428
PAL model: CCD-TRV228E/TRV428E

3-1-1. Equipment to Required

1) TV monitor
2) Oscilloscope (dual-phenomenon, band width above 30 MHz with delay mode) (Unless specified otherwise, use a 10 : 1 probe)
3) Frequency counter
4) Digital voltmeter
5) Audio level meter
6) Audio distortion meter
7) Regulated power supply
8) NTSC alignment tapes
   - For tracking adjustment (WR5-1NP)
     Parts code: 8-967-995-02
   - For video frequency characteristics adjustment (WR5-7NE)
     Parts code: 8-967-995-13
   - For checking Standard 8 mode operations
     For LP (WR5-4NL)
     Parts code: 8-967-995-51
     For SP (WR5-5NSP)
     Parts code: 8-967-995-42
     Note: The following alignment tapes can also be used.
     WR5-4NSP (8-967-995-41)
   - For checking Hi8 mode operations
     For LP (WR5-8NLE)
     Parts code: 8-967-995-52
     For SP (WR5-8NSE)
     Parts code: 8-967-995-43
   - For BPF adjustment (WR5-11NS)
     Parts code: 8-967-995-71
9) PAL alignment tapes
   - For tracking adjustment (WR5-1CP)
     Parts code: 8-967-995-07
   - For video frequency characteristics adjustment (WR5-7CE)
     Parts code: 8-967-995-18
   - For checking Standard 8 mode operations
     For LP (WR5-4CL)
     Parts code: 8-967-995-56
     For SP (WR5-5CSP)
     Parts code: 8-967-995-47
     Note: The following alignment tapes can also be used.
     1) WR5-3CL (8-967-995-36)
     2) WR5-4CSP (8-967-995-46)
   - For checking Hi8 mode operations
     For LP (WR5-8CLE)
     Parts code: 8-967-995-57
     For SP (WR5-8CSE)
     Parts code: 8-967-995-48
   - For BPF adjustment (WR5-11CS)
     Parts code: 8-967-995-76
10) Adjustment remote commander (J-6082-053-B)
11) CPC jig connector (J-6082-539-A)
12) I/F unit for LANC control (J-6082-521-A)

3-1-2. Precautions on Adjusting

This set is adjusted in two modes, VTR mode and CAMERA mode.

3-1-3. Adjusting Connectors

Some of the adjusting points of the video section are concentrated at VC-341 board CN007. Connect the measuring instruments via I/F unit for LANC control (J-6082-521-A) and CPC jig connector (J-6082-539-A).

The following table shows the pin No. and signal name of CN007.

Pin No.	Signal Name	Pin No.	Signal Name
1	EEP SCK	9	PB RF
2	PB RF	10	REG GND
3	BPF MONI	11	LANC OUT
4	CAP FG	12	LANC IN
5	SWP DIR	13	XLANC PWR ON
6	REG GND	14	EEP SO
7	REC RF	15	EEP SI
8	REG GND	16	XCS EEP

Table 6-3-1

The following table lists the test point of I/F unit of for LANC control.

Pin No.	Signal Name	Pin No.	Signal Name
	BL	15	EVF VCO
14	EVF VG		BL 4.75
9	PB RF (MON)		
3	BPF MONI	6, 8, 10	GND
	TMS	7	REC RF (RF IN)
	TDI		TDO
5	SWP		TCK
4	CAP FG	2	IR VIDEO

Note: Pin No. are those of CN007.

Table 6-3-2

3-1-4. Connecting the Equipment

Connect the measuring instruments as shown in Fig. 6-3-1 and perform the adjustments.

Connecting the TV Monitor and Adjustment Remote Commander

Note: Use either the AC power adaptor or the InfoLITHIUM battery as the power supply of I/F unit for LANC control.

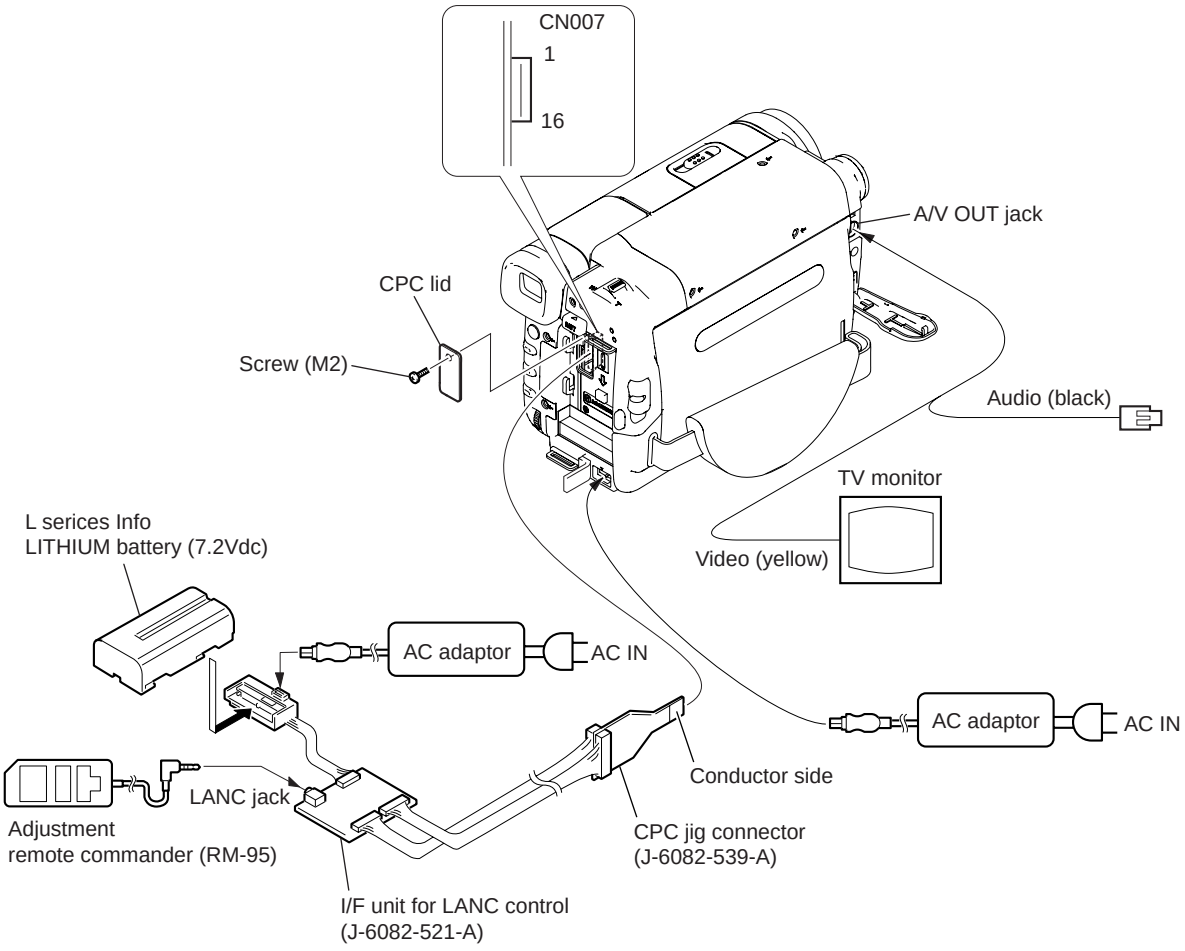


Fig. 6-3-1

3-1-5. Alignment Tapes

The following table lists alignment tapes which are available.
Use the tape specified in the signal column for each adjustment. If the type of tape to be used for checking operations is not specified, use whichever type.

Alignment tape

Name	Recording mode	Tape type	Tape speed	Usage
Tracking (WR5-1NP(NTSC), WR5-1CP(PAL))	Standard 8	MP	SP	Tape path adjustment, Switching position adjustment
Video frequency characteristics (WR5-7NE(NTSC), WR5-7CE(PAL))	Hi8	ME	SP (NTSC) LP (PAL)	Frequency characteristics adjustment
Operation check (WR5-5NSP(NTSC), WR5-5CSP(PAL))	Standard 8	MP	SP	Operation check
Operation check (WR5-8NSE(NTSC), WR5-8CSE(PAL))	Hi8	ME	SP	
Operation check (WR5-4NL(NTSC), WR5-4CL(PAL))	Standard 8	MP	LP	
Operation check (WR5-8NLE(NTSC), WR5-8CLE(PAL))	Hi8	ME	LP	
BPF adjustment (WR5-11NS(NTSC), WR5-11CS(PAL))	Standard 8	MP	SP	BPF adjustment

Tape type:
ME ..... Particle type metal tape
MP ..... Evaporated type metal tape

Table 6-3-3

Fig. 6-3-2. shows the 75% color bar signals recorded on the alignment tape.
Note: Measure using the VIDEO terminal (Terminated at 75 Ω).

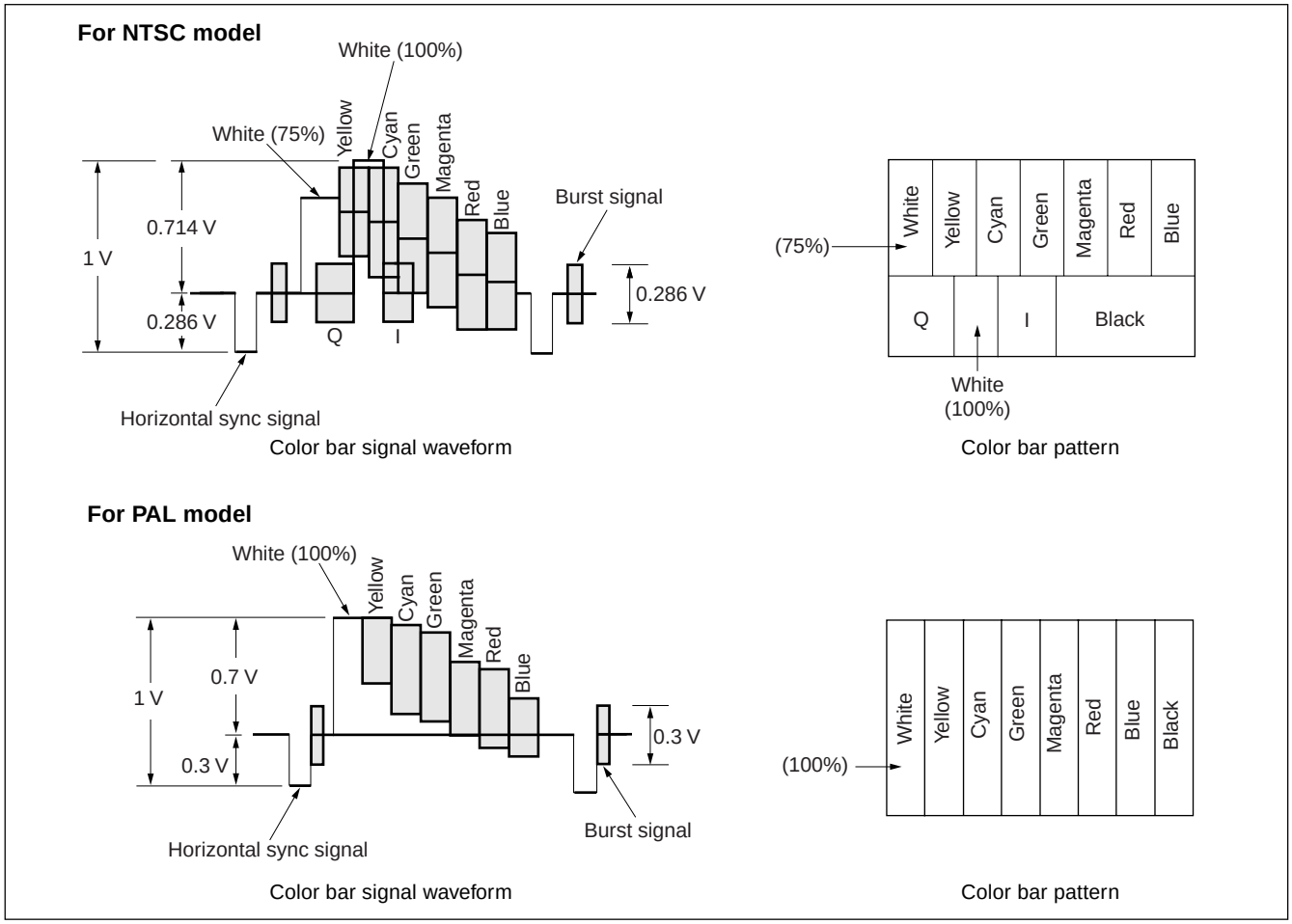


Fig. 6-3-2. Color bar signal of alignment tapes

3-1-6. Output Level and Impedance

S video output

4-pin mini DIN

Luminance signal:

1 Vp-p, 75 Ω, unbalanced

Chrominance signal:

CCD-TRV128/TRV228/TRV328/TRV428:
0.286 Vp-p, 75 Ω, unbalanced
CCD-TRV228E/TRV428E:
0.3 Vp-p, 75 Ω, unbalanced

Audio/Video output

AV MINIJACK:

VIDEO: 1 Vp-p, 75 Ω, unbalanced, sync negative

AUDIO: 327 mV (at output impedance more than 47 kΩ)

Output impedance with less than 2.2 kΩ

3-1-7. Recording Mode (Standard 8/Hi8) switching

The record mode (Standard 8/Hi8) of this unit switches as shown in the following table. The playback mode (Standard 8/Hi8) switches automatically according to the recording mode of the tape played back.

Tape Used	Recording Mode
ME	Hi8
Hi8 MP	
MP	Standard 8

3-2. SYSTEM CONTROL SYSTEM ADJUSTMENTS

1. Initialization of 8, A, C, D, E, F, 1F Page Data

If the 8, A, C, D, E, F, 1F page data is erased due to some reason, perform "1-2. INITIALIZATION OF 8, A, C, D, E, F, 1F PAGE DATA" of "6-1. CAMERA SECTION ADJUSTMENTS".

3-3. SERVO SYSTEM ADJUSTMENTS

Before perform the servo system adjustments, check that the specified values of "28 MHz Origin Oscillation Adjustment" of "VIDEO SYSTEM ADJUSTMENTS" is satisfied.
Check that the data of page: 0, address: 10 is "00".
If not, select page: 0, address: 10, and set the data "00".

1. CAP FG Offset Adjustment (VC-341 board)

RadarW

Set the CAP FG signal duty cycle to 50% to establish an appropriate capstan servo. If deviated, the uneven rotation of capstan and noise can occur in the playback mode.

Mode	VTR stop (PLAY/EDIT mode)
Signal	No signal
Measurement Point	Displayed data of page: 3, address: 03
Measuring Instrument	Adjusting remote commander
Adjustment Page	C
Adjustment Address	18
Specified value	The data of page: 3, address: 03 is "00"

Note 1: Check that the data of page: 0, address: 10 is "00".

Adjusting method:

Order	Page	Address	Data	Procedure
1				Close the cassette compartment without inserting cassette.
2	0	01	01	
3	3	01	81	Press PAUSE button.
4	3	02		Check the data changes to "00".
5	3	03		Check that the data is "00". (Note 2)
6	0	01	00	

Note 2: If the data is other than "00", adjustment has errors. For the error contents, see the following table.

Data of page: 3, address: 03	Error contents
01	Adjustment time out
10	Mechanism mode error (For example, the adjustment is performed in the mode except for VTR stop mode.)

2. Switching Position Adjustment (VC-341 board)

If deviated in this case cause switching noise or jitter on the played back screen.

Mode	VTR playback
Signal	Alignment tape: For tracking adjustment (WR5-1NP(NTSC)) (WR5-1CP(PAL))
Measurement Point	CH1: SWP (Pin ⑤ of CN007) CH2: PB RF (Pin ⑨ of CN007)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	16, 17
Specified value	t1 = 0 ± 10 µsec

Note 1: Check that the data of page: 0, address: 10 is "00".

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	3	92		Set the bit value of bit 2 to "1", and press PAUSE button. (Note 2)
3	C	16		Change the data and minimize "t1". (Coarse adjustment)
4	C	16		Press PAUSE button.
5	C	17		Change the data and adjust so that the switching position (t1) becomes specified value. (Fine adjustment)
6	C	17		Press PAUSE button.
7	3	92		Set the bit value of bit 2 to "0", and press PAUSE button. (Note 2)
8	0	01	00	

Note 2: For the bit values, refer to "6-4. SERVICE MODE", "4-3. 3. Bit Value Discrimination".

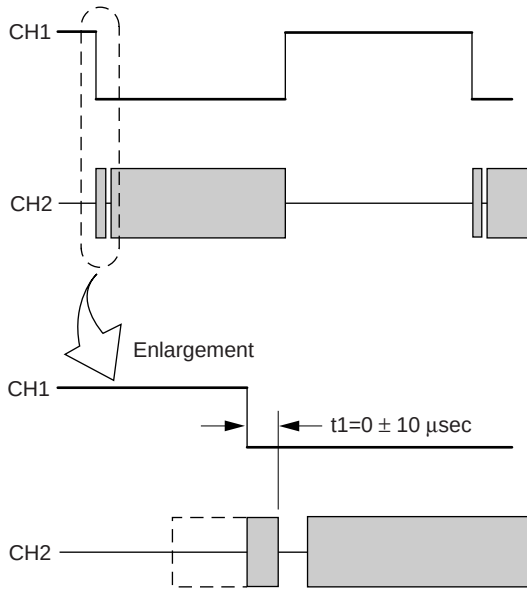


Fig. 6-3-3

3-4. VIDEO SYSTEM ADJUSTMENTS

Before perform the video system adjustments, check that the data of page: 0, address: 10 is "00".
If not, select page: 0, address: 10, and set the data "00".
Video system adjustments must be performed in the following order.

Adjusting Procedure:

1. 28 MHz origin oscillation adjustment
2. AFC f_0 adjustment
3. S VIDEO OUT Y level adjustment
4. S VIDEO OUT C level adjustment
5. VIDEO OUT level check
6. REC Y current adjustment
7. REC C/AFM current adjustment

1. 28 MHz Origin Oscillation Adjustment (VC-341 board)

Set the frequency of the clock for synchronization.
If deviated, the synchronization will be disrupted and the color will become inconsistent.

Mode	VTR stop (PLAY/EDIT mode)
Signal	No signal
Measurement Point	Pin ⑪ of IC151
Measuring Instrument	Frequency counter
Adjustment Page	F
Adjustment Address	10
Specified value	f = 14318181 ± 68 Hz (NTSC model) f = 14187500 ± 54 Hz (PAL model)

Note 1: Check that the data of page: 0, address: 10 is "00".
Note 2: Refer to "2. DISASSEMBLY", when opening the VC-341 board.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	F	10		Change the data and set the frequency (f) to the specified value.
3	F	10		Press PAUSE button.
4	0	01	00	

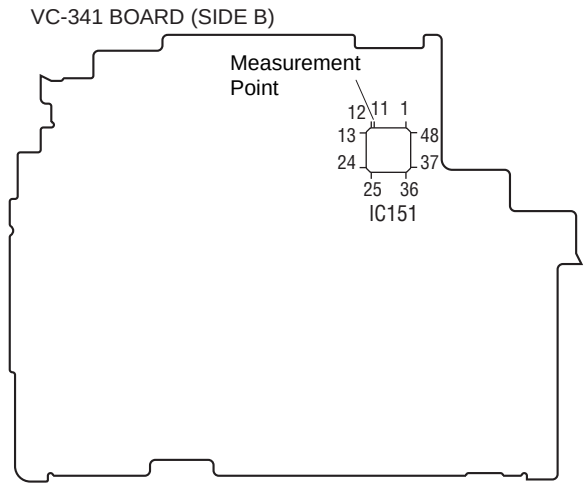


Fig. 6-3-4

2. AFC f_0 Adjustment (VC-341 board) RadarW

Adjust the pull-in range of A/D converted clock generator during playback.

Mode	VTR stop (PLAY/EDIT mode)
Signal	No signal
Measurement Point	Displayed data of page: 3, address: 03
Measuring Instrument	Adjusting remote commander
Adjustment Page	C
Adjustment Address	19
Specified value	The data of page: 3, address: 03 is "00"

Note 1: Check that the data of page: 0, address: 10 is "00".

Adjusting method:

Order	Page	Address	Data	Procedure
1				Close the cassette compartment without inserting cassette.
2	0	01	01	
3	3	01	82	Press PAUSE button.
4	3	02		Check the data changes to "00".
5	3	03		Check that the data is "00". (Note 2)
6	0	01	00	

Note 2: If the data is other than"00", adjustment has errors.

3. S VIDEO OUT Y Level Adjustment (VC-341 board)

Mode	VTR stop (PLAY/EDIT mode)
Signal	No signal
Measurement Point	Y signal terminal of S VIDEO jack (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	1A
Specified value	A = 286 ± 5 mVp-p (NTSC model) A = 300 ± 5 mVp-p (PAL model)

Note: Check that the data of page: 0, address: 10 is "00".

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	C	1A		Change the data and set the SYNC level (A) to the specified value.
3	C	1A		Press PAUSE button.
4	0	01	00	

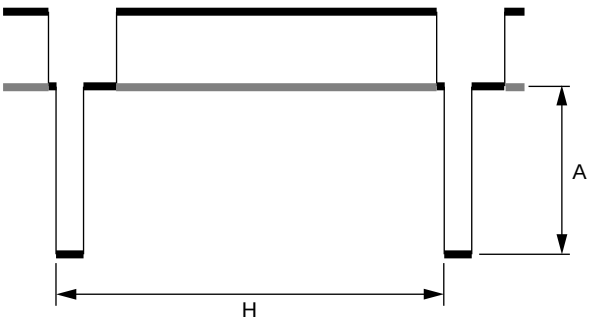


Fig. 6-3-5

4. S VIDEO OUT C Level Adjustment (VC-341 board)

Mode	VTR stop (PLAY/EDIT mode)
Signal	No signal
Measurement Point	Chroma signal terminal of S VIDEO jack (75 Ω terminated) External trigger: Y signal terminal of S VIDEO jack (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	1B
Specified value	A = 286 ± 5 mVp-p (NTSC model) A = 300 ± 5 mVp-p (PAL model)

Note: Check that the data of page: 0, address: 10 is "00".

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	C	1B		Change the data and set the burst level (A) to the specified value.
3	C	1B		Press PAUSE button.
4	0	01	00	

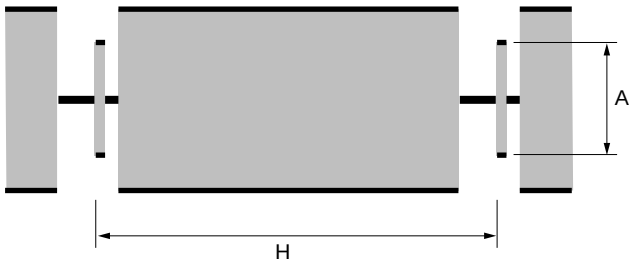


Fig. 6-3-6

5. VIDEO OUT Level Check (VC-341 board)

Mode	VTR stop (PLAY/EDIT mode)
Signal	No signal
Measurement Point	Video terminal of A/V jack (75 Ω terminated)
Measuring Instrument	Oscilloscope
Specified value	Sync level: A = 286 ± 20 mVp-p (NTSC) A = 300 ± 20 mVp-p (PAL) Burst level: B = 286 ± 20 mVp-p (NTSC) B = 300 ± 20 mVp-p (PAL)

Checking method:

Order	Page	Address	Data	Procedure
1				Check that the SYNC level (A) satisfies the specified value.
2				Check that the burst level (B) satisfies the specified value.

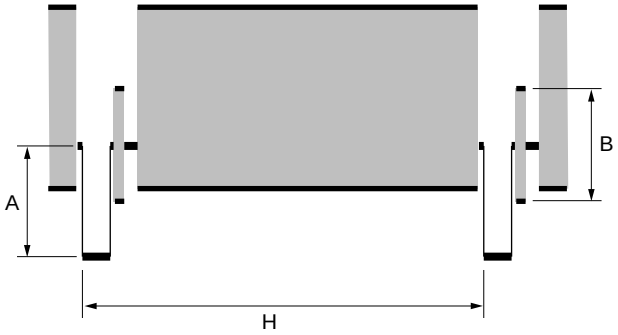


Fig. 6-3-7

6. REC Y Current Adjustment (VC-341 board)

Adjust the Y FM signal recording current.

Mode	VTR recording (PLAY/EDIT mode)
Signal	No signal
Measurement Point	REC RF (Pin ⑦ of CN007)
Measuring Instrument	Oscilloscope (20 MHz BW LIMIT: OFF)
Adjustment Page	C
Adjustment Address	1E, 1F
Specified value	A = 235 ± 5 mVp-p (NTSC) A = 280 ± 5 mVp-p (PAL)

Note 1: Check that the data of page: 0, address: 10 is "00".

Note 2: Don't disconnect the DC power supply of camcoder during the following adjustments.
When the following symptom occurs, reset the data of A page to the values note down.
1) The power is shut off so that unit can not operate.

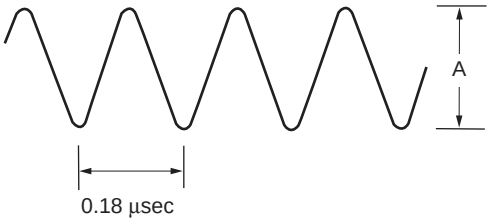


Fig. 6-3-8

Adjusting method:

Order	Page	Address	Data	Procedure
1				Close the cassette compartment without inserting cassette.
2				Set to the VTR stop mode.
3	0	01	01	
4	C	14	01	Press PAUSE button.
5	A	10	10	Press PAUSE button.
6	7	10	02	Press PAUSE button.
7	A	1A		Note down the data.
8	A	1A		Set the following data, and press PAUSE button. 06: NTSC model 26: PAL model
9				Set to the VTR recording mode. (Note 3)
10	3	92	10	
11	3	01	41	Press PAUSE button.
12	C	1F		Change the data and set the REC Y signal level (A) to the specified value.
13	C	1F		Press PAUSE button.
14	C	1F		Read the data, and this data is named D_{1F}.
15	C	1E	D_{1F}	Press PAUSE button.
16	3	01	00	Press PAUSE button.
17	3	92	00	
18				Set to the VTR stop mode.
19	A	1A		Set data noted down at step 7, and press PAUSE button.
20	7	10	E2	Press PAUSE button.
21	A	10	00	Press PAUSE button.
22	C	14	00	Press PAUSE button.
23	0	01	00	

Note 3: Use the REC buttons of the adjustment remote commander (with HOLD switch set in the OFF position).

7. REC C/AFM Current Adjustment

7-1. Preparations

Note 1: Check that the data of page: 0, address: 10 is “00”.

Order	Page	Address	Data	Procedure
1				Close the cassette compartment without inserting cassette.
2				Set to the VTR stop mode.
3	0	01	01	
4	C	14	01	Press PAUSE button.
5	A	10	10	Press PAUSE button.
6	7	10	02	Press PAUSE button.
7	A	1A		Note down the data.
8	A	1A		Set the following data, and press PAUSE button. 06: NTSC model 26: PAL model

Note 2: Don’t disconnect the DC power supply of camcoder during the following adjustments.
When the following symptom occurs, reset the data of A page to the values note down.
1) The power is shut off so that unit can not operate.

7-2. REC C Current Check (VC-341 board)

Check the recording current level of the REC chroma signal.
If it is too low, chroma signal noise in playback picture will be increased. If too high, Y signal noises will increase and white modulation noises will be produced.

Mode	VTR recording (PLAY/EDIT mode)
Signal	No signal
Measurement Point	REC RF (Pin ⑦ of CN007)
Measuring Instrument	Oscilloscope (20 MHz BW LIMIT: OFF)
Specified value	A = 50.8 ± 3.0 mVp-p (NTSC) A = 54.0 ± 3.0 mVp-p (PAL)

Note 1: Check that the data of page: 0, address: 10 is “00”.

Checking method:

Order	Page	Address	Data	Procedure
1				Close the cassette compartment without inserting cassette.
2				Set to the VTR recording mode. (Note 2)
3	0	01	01	
4	3	91	30	
5	3	92	20	
6	C	25		Note down the data.
7	C	25	00	Press PAUSE button.
8	3	01	41	Press PAUSE button.
9				Check that the REC chroma signal level (A) satisfies the specified value, and note down the signal level.
10	3	01	00	Press PAUSE button.
11	C	25		Set data noted down at step 6, and press PAUSE button.
12	3	91	00	
13	3	92	00	
14	0	01	00	
15				Perform “REC AFM Current Adjustment” and “Processing after Completed Adjustment”.

Note 2: Use the REC buttons of the adjustment remote commander (with HOLD switch set in the OFF position).

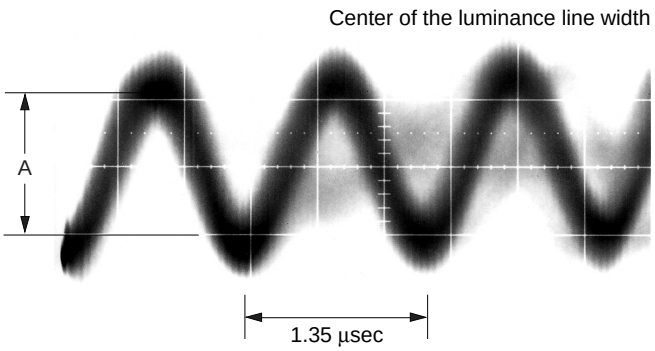


Fig. 6-3-9

7-3. REC AFM Current Adjustment (VC-341 board)

Check the recording current level of the REC AFM signal.
If it is too low, the audio S/N will be deteriorated. If too high, color beets will be produced on self recording/playback image.

Mode	VTR recording (PLAY/EDIT mode)
Signal	No signal
Measurement Point	REC RF (Pin ⑦ of CN007)
Measuring Instrument	Oscilloscope (20 MHz BW LIMIT: OFF)
Adjustment Page	C
Adjustment Address	25
Specified value	NTSC model A = (REC chroma signal level) × 0.292 ± 0.9 mVp-p (Note 1) PAL model A = (REC chroma signal level) × 0.309 ± 0.9 mVp-p (Note 1)

Note 1: Check that the data of page: 0, address: 10 is “00”.
Note 2: REC chroma signal level is noted down at step 9 of “REC C Current Check”

Adjusting method:

Order	Page	Address	Data	Procedure
1				Close the cassette compartment without inserting cassette.
2				Set to the VTR recording mode. (Note 3)
3	0	01	01	
4	3	92	20	
5	3	01	41	Press PAUSE button.
6	C	25		Change the data and set the REC AFM signal level (A) to the specified value.
7	C	25		Press PAUSE button.
8	3	01	00	Press PAUSE button.
9	3	92	00	
10	0	01	00	
11				Perform “Processing after Completed Adjustment”.

Note 3: Use the REC buttons of the adjustment remote commander (with HOLD switch set in the OFF position).

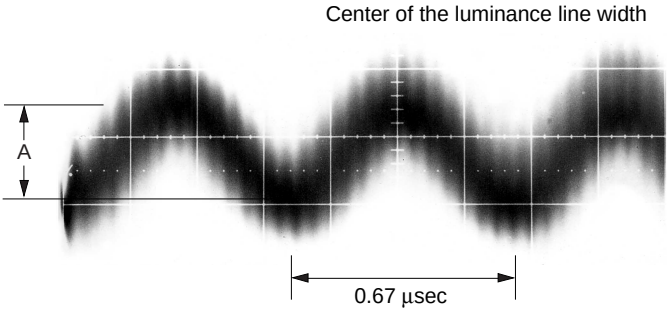


Fig. 6-3-10

7-4. Processing after Completed Adjustment

Note: Check that the data of page: 0, address: 10 is “00”.

Order	Page	Address	Data	Procedure
1				Set to the VTR stop mode.
2	0	01	01	
3	A	1A		Set data noted down at step 7 of “7-1. Preparations”, and press PAUSE button.
4	7	10	E2	Press PAUSE button.
5	A	10	00	Press PAUSE button.
6	C	14	00	Press PAUSE button.
7	0	01	00	

3-5. AUDIO SYSTEM ADJUSTMENTS

Before performing the audio system adjustments, check that the data of page: 0, address: 10 is “00”.
If not, select page: 0, address: 10, and set data “00”.

[Connecting the measuring instruments for the audio]

Connect the audio system measuring instruments in addition to the video system measuring instruments as shown in Fig. 6-3-11.

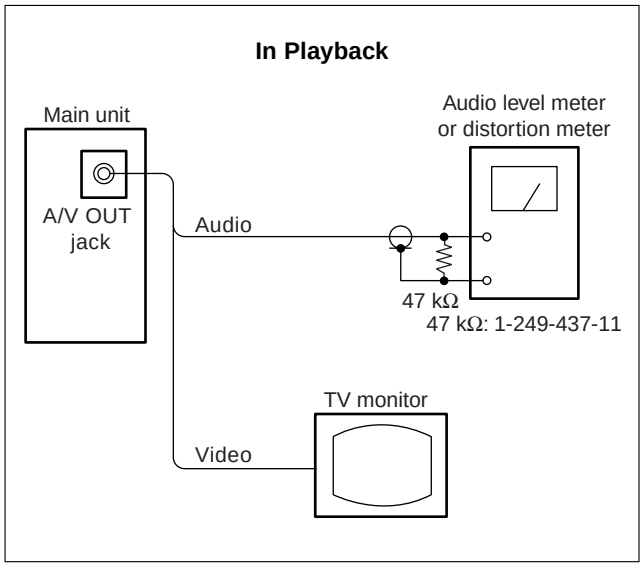


Fig. 6-3-11

1. BPF f_0 Adjustment (VC-341 board)

Set the BPF passing frequency of IC801 so that the AFM signal can separate from the playback RF signal properly. If deviated, the noises and distortions will increase during high volume playback.

Mode	VTR playback (PLAY/EDIT mode)
Signal	Alignment tape For BPF adjustment (WR5-11NS (NTSC)) (WR5-11CS (PAL))
Measurement Point	Audio terminal of A/V OUT jack
Measuring Instrument	Distortion meter
Adjustment Page	C
Adjustment Address	30
Specified value	The distortion rate should be minimum.

Note: Check that the data of page: 0, address: 10 is “00”.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	C	30		Change the data and minimize the distortion rate.
3	C	30		Press PAUSE button.
4	0	01	00	

2. 1.5 MHz Deviation Adjustment (VC-341 board)

Adjust to the optimum 1.5 MHz audio FM signal deviation.
If the adjustment is not correct, its playback level will differ from that other units.

Mode	VTR playback (PLAY/EDIT mode)
Signal	Alignment tape For checking operation (WR5-5NSP (NTSC)) (WR5-5CSP (PAL))
Measurement Point	Audio terminal of A/V OUT jack
Measuring Instrument	Audio level meter
Adjustment Page	C
Adjustment Address	2F
Specified value	–7.5 ± 2.0 dBs

Note 1: Check that the data of page: 0, address: 10 is “00”.
Note 2: Perform “BPF f_0 Adjustment” before this adjustment.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	C	2F		Change the data and set the 400 Hz audio signal level to the specified value.
3	C	2F		Press PAUSE button.
4	0	01	00	

6-4. SERVICE MODE

4-1. ADJUSTMENT REMOTE COMMANDER

The adjustment remote commander is used for changing the calculation coefficient in signal processing, EVR data, etc. The adjustment remote commander performs bi-directional communication with the unit using the remote commander signal line (LANC). The resultant data of this bi-directional communication is written in the non-volatile memory.

1. Using the Adjustment Remote Commander

1) Connect the adjustment remote commander to CN007 of VC-341 board via I/F unit for LANC control (J-6082-521-A) and CPC jig connector (J-6082-539-A).
2) Set the HOLD switch of the adjustment remote commander to "HOLD" (SERVICE position). If it has been properly connected, the LCD on the adjustment remote commander will display as shown in Fig. 6-4-1.

Fig. 6-4-1

3) Operate the adjustment remote commander as follows.
   - Changing the page
     The page increases when the EDIT SEARCH+ button is pressed, and decreases when the EDIT SEARCH– button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0 1 2 3 4 5 6 7 8 9 A B C D E F
LCD Display	0 1 2 3 4 5 6 7 8 9 A b c d E F
Decimal notation conversion value	0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

   - Changing the address
     The address increases when the FF (▶▶) button is pressed, and decreases when the REW (◀◀) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data increases when the PLAY (▶) button is pressed, and decreases when the STOP (■) button is pressed. There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     The PAUSE button must be pressed to write the adjustment data in the nonvolatile memory. (The new adjusting data will not be recorded in the nonvolatile memory if this step is not performed)
4) After completing all adjustments, turn off the main power supply (8.4 V) once.

2. Precautions Upon Using the Adjustment Remote Commander

Mishandling of the adjustment remote commander may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

4-2. DATA PROCESS

The calculation of the DDS display and the adjustment remote commander display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Indicates the hexadecimal-decimal conversion table.

Hexadecimal-decimal Conversion Table

	Lower digit of hexadecimal / Upper digit of hexadecimal	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	D (d) ②	E (E)	F (F)
	0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
	2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
	3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
	4	64	65	66	67	68	69	70	71	72	73	74	77	76	77	78	79
	5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
	6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
	7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
	8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
	9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
	A (A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
①	B (b)	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
	C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
	D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
	E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
	F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: The characters shown in the parenthesis ( ) shown the display on the adjustment remote commander.

(Example) If the DDS display or the adjustment remote commander shows BD (bd);
Because the upper digit of the adjustment number is B (b), and the lower digit is D (d), the meeting point "189" of ① and ② in the above table is the corresponding decimal number.

Table 6-4-1

4-3. SERVICE MODE

Additional note on adjustment

Note: After the completion of the all adjustments, cancel the service mode by either of the following ways.

1) After data on page: D and C is restored, press the RESET button and unplug the main power supply. (In this case, date and time and menu setting have been set by users are canceled. Perform resetting)
2) After data on page: D and C is restored, select page: 0, address: 01, and return the data to 00. And when data on page: 2 are changed, return data to the original condition.

1. Setting the Test Mode

Page C	Address 14

Data	Function
00	Normal
01	Test mode Various emergency prohibitions and releases Drum emergency, capstan emergency, loading motor emergency, reel emergency, tape top and end, DEW detection

Page D	Address 10

Data	Function
00	Normal
01	Forced camera power ON
02	Forced VTR power ON
03	Forced camera + VTR power ON

- Before setting the data , select page: 0, address: 01, and set data: 01.
- For page D and C, the data set will be recorded in the non-volatile memory by pressing the PAUSE button of the adjustment remote commander. In this case, take note that the test mode will not be exited even when the main power is turned off (8.4 Vdc).
- After completing adjustments/repairs, be sure to return the data of this address to 00, and press the PAUSE button of the adjustment remote commander. And select page: 0, address: 01, and set data: 00.

2. Emergency Memory Address

Page C	Address F4 to FF

Address	Contents
F4	1st EMG code
F6	Upper: MSW code when the mechanism starts shifting the 1st time Lower: MSW code when the 1st emergency occurs
F7	Lower: Target MSW code of the 1st emergency occurs
F8	2nd EMG code
FA	Upper: MSW code when the mechanism starts shifting the 2nd time Lower: MSW code when the 2nd emergency occurs
FB	Lower: Target MSW code of the 2nd emergency occurs
FC	Last EMG code
FE	Upper: MSW code when the mechanism starts shifting the last time Lower: MSW code when the last emergency occurs
FF	Lower: Target MSW code of the last emergency occurs

When there are no emergency, data 00 will be written in the above addresses (F4 to FF). When the first emergency occurs, the data corresponding to the emergency will be written in the address (F4 to F7) for this first emergency. In the same way, when the second emergency occurs, the data corresponding to the emergency will be written in the address (F8 to FB) for this second emergency. The data corresponding to the emergency occurring the last will be written in the address (FC to FF) for this last emergency. Therefore the data of addresses FC to FF are renewed each time an emergency occurs.

Note: After completing adjustments, be sure to initialize the data of address F4 to FF to “00”.

Initializing method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	3	01	37	Press PAUSE button.
3	3	02		Check the data changes to “00”.
4	0	01	00	

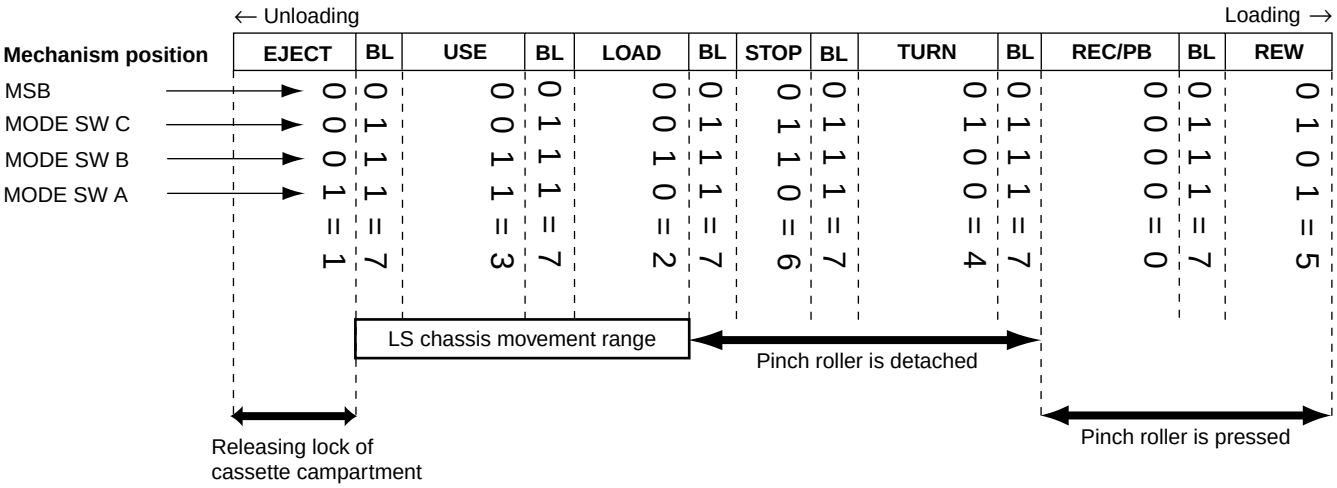
2-1. EMG Code (Emergency Code)

The codes shown in the following table which correspond to errors that occur are recorded in addresses F4, F8, and FC.

Code	Type of Emergency
00	No error
10	Loading motor time-out during load
11	Loading motor time-out during unload
20	T reel emergency (reel slack) during unloading
21	S reel emergency (reel slack) during unloading
22	T reel emergency
23	S reel emergency
30	FG emergency at the start up of the capstan
31	FG emergency during the normal rotation of the capstan
40	FG emergency at the start up of the drum
41	PG emergency at the start up of the drum
42	FG emergency during the normal rotation of the drum
43	PG emergency during the normal rotation of the drum
44	Phase emergency during the normal rotation of the drum

2-2. MSW Codes

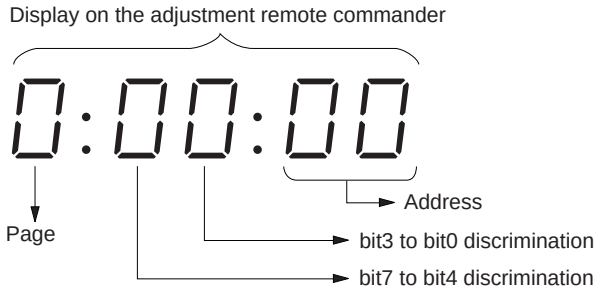
- The lower parts of the data of addresses F6, FA and FE represent the MSW codes (mode switch, mechanism position) when errors occurs.
- The upper parts of the data of addresses F6, FA and FE represent, when the mechanism position is to be moved, the MSW codes at the start of movement (when moving the loading motor).
- The lower parts of the data of addresses F7, FB and FF represent the MSW codes of the desired movement when the mechanism position is to be moved.



Mechanism Position	MSW Code	Contents
EJECT	1	Position at which the cassette compartment lock is released. The mechanism will not move any further in the unloading direction.
BL	7	BLANC code. Between two codes. The mechanism will not be stopped by this code while it is operating.
USE	3	EJECT completion position. When the cassette is ejected, the mechanism will stop at this position.
LOAD	2	Code during loading/unloading. Code that is used while the LS chassis is moving.
STOP	6	Normal stop position. The pinch roller separates, the tension regulator returns, and the brakes of both reels turn on.
TURN	4	Position at which is used when the pendulum gear swings from S to T or from T to S.
REC/PB	0	PB, REC, CUE, REV, PAUSE, FF positions. The pinch roller is pressed and tension regulator is on.
REW	5	REW position. REW are carried at this position. The mechanism will not move any further in the loading direction.

3. Bit Value Discrimination

Bit values must be discriminated using the display data of the adjustment remote commander for the following items. Us the table below to discriminate if the bit value is “1” or “0”.



(Example) If the remote commander display is “8E”, bit value from bit 7 to bit 4 can be discriminated from the column Ⓐ, and those from bit 3 to bit 0 from column Ⓑ.

	Display on the adjustment remote commander	Bit values			
		bit3 or bit7	bit2 or bit6	bit1 or bit5	bit0 or bit4
	0	0	0	0	0
	1	0	0	0	1
	2	0	0	1	0
	3	0	0	1	1
	4	0	1	0	0
	5	0	1	0	1
	6	0	1	1	0
	7	0	1	1	1
Ⓐ	8	1	0	0	0
	9	1	0	0	1
	A (R)	1	0	1	0
	B (b)	1	0	1	1
	C (C)	1	1	0	0
	D (d)	1	1	0	1
Ⓑ	E (E)	1	1	1	0
	F (F)	1	1	1	1

4. Switch Check (1)

Page 2	Address 81

Note: Check that the data of page: 0, address: 10 is “00”.

Bit	Function	When bit value = 1	When bit value = 0
0	POWER SW (SS-5100 block S001)	ON	OFF
1	MODE SW (SS-5100 block S001)	ON	OFF
2	DSPL/BATT INFO SW (CF-5100 block S001)	ON	OFF
3	EJECT SW (SS-5100 block S002)	ON	OFF
4	CC DOWN SW (Mechanism chassis)	ON (DOWN)	OFF (UP)
5			
6			
7			

Using method:

1) Select page: 2, address: 81.
2) By discriminating the bit value of display data, the state of the switches can be discriminated.

5. Switch Check (2)

Page 7	Address 0C

Note: Check that the data of page: 0, address: 10 is “00”.

Bit	Function	When bit value = 1	When bit value = 0
2	A/V OUT jack (SI-039 board)	Used	Not used
3	S VIDEO jack (SI-039 board)	Used	Not used

Using method:

1) Select page: 7, address: 0C.
2) By discriminating the bit value of display data, the state of the switch can be discriminated.

6. Switch Check (3)

Page 2	Address 60 to 67

Note: Check that the data of page: 0, address: 10 is “00”.

Using method:
1) Select page: 2, address: 60 to 67.
2) By discriminating the display data, the pressed key can be discriminated.

Address	Data							
	00 to 0C	0D to 24	25 to 3F	40 to 5D	5E to 81	82 to AA	AB to D7	D8 to FF
60 (KEY AD0) (IC701 ⑲)	STOP (CF-5100 block) (S003)	FF (CF-5100 block) (S007)	REW (CF-5100 block) (S012)	PLAY (CF-5100 block) (S015)		EASY (CF-5100 block) (S022)	PANEL CLOSE (CF-5100 block) (S023)	PANEL OPEN (CF-5100 block) (S023)
61 (KEY AD1) (IC701 ⑳)	PAUSE (CF-5100 block) (S004)	COUNTER RESET (CF-5100 block) (S008)	FADER (CF-5100 block) (S011)	FOCUS (CF-5100 block) (S016)	VIDEO LIGHT (CF-5100 block) (S020)	BACKLIGHT (CF-5100 block) (S019)		No key input
62 (KEY AD2) (IC701 ㉑)	TIME (CF-5100 block) (S005)	MENU (CF-5100 block) (S009)	END SEARCH (CF-5100 block) (S013)	VOLUME – (CF-5100 block) (S017)	VOLUME + (CF-5100 block) (S021)	EXECUTE (CF-5100 block) (S024)		No key input
63 (KEY AD3) (IC701 ㉕)	DATE (CF-5100 block) (S006)	EXPOSURE (CF-5100 block) (S010)	TITLE (CF-5100 block) (S014)	EASY DUB (CF-5100 block) (S018)				No key input
64 (KEY AD4) (IC701 ㉖)								
65 (KEY AD5) (IC701 ㉗)	PANEL REVERSE (PR-5100 block) (S601)							PANEL NORMAL (PR-5100 block) (S601)
66 (KEY AD6) (IC701 ㉘)								
67 (KEY AD7) (IC701 ㉙)								

7. LED, Video Light, IR Light Check

Page 7	Address 07	Bit5, Bit6

Note: Check that the data of page: 0, address: 10 is “00”.

Using method:
1) Set the unit to camera mode.
2) Select page: 7, address: 07, and set the bit value of bit5 and bit6 to “1”.
3) Check that all LED are lit, that the IR light is lit, and that the video light is lit.
4) Select page: 7, address: 07, and set the bit value of bit5 and bit6 to “0”.

8. Record of Use Check

Page 7	Address A4 to A6, C8 to CF

Address	Function		Remarks
A4	Drum rotation	Hour (H)	1000th place digit and 100th place digit of counted time (decimal digit)
A5	counted time	Hour (L)	10th place digit and 1st place digit of counted time (decimal digit)
A6	(BCD code)	Minute	
C8	User initial power	Year	After setting the clock, set the date of power on next
C9	on date	Month	
CA	(BCD code)	Day	
CB	Final condensation	Year	
CC	occurrence date	Month	
CD	(BCD code)	Day	
CE	Video light	Hour (L)	10th place digit and 1st place digit of counted time (hexadecimal digit)
CF	counted time (Note 4)	Hour (H)	1000th place digit and 100th place digit of counted time (hexadecimal digit)

Using method:

1) The record of use data is displayed at page: 7, addresses: A4 to A6 and C8 to CF.

Note 1: This data will be kept even if the cabinet (R) assembly (VC-341 board CN005 (22P)) is removed.

Note 2: When the drum was replaced, initialize the drum rotation counted time.

Note 3: When replacing the video light, initialize the data of address: CE and CF.

Note 4: Video light counted time is indicated in hexadecimal notation. Convert hexadecimal numbers to decimals before useing them.

Initializing method of drum rotation counted time:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 7, address: A4, set data: 00, and press the PAUSE button.
3) Select address: A5 and A6 and set data “00” into them in the same way as in address: A4.
4) Select page: 0, address: 01, and set data: 00.

9. Record of Self-diagnosis Check

Page 7	Address B0 to C6

Address	Self-diagnosis code
B0	“Repaired by” code (Occurred 1st time) *1
B1	“Block function” code (Occurred 1st time)
B2	“Detailed” code (Occurred 1st time)
B4	“Repaired by” code (Occurred 2nd time) *1
B5	“Block function” code (Occurred 2nd time)
B6	“Detailed” code (Occurred 2nd time)
B8	“Repaired by” code (Occurred 3rd time) *1
B9	“Block function” code (Occurred 3rd time)
BA	“Detailed” code (Occurred 3rd time)
BC	“Repaired by” code (Occurred 4th time) *1
BD	“Block function” code (Occurred 4th time)
BE	“Detailed” code (Occurred 4th time)
C0	“Repaired by” code (Occurred 5th time) *1
C1	“Block function” code (Occurred 5th time)
C2	“Detailed” code (Occurred 5th time)
C4	“Repaired by” code (Occurred the last time) *1
C5	“Block function” code (Occurred the last time)
C6	“Detailed” code (Occurred the last time)

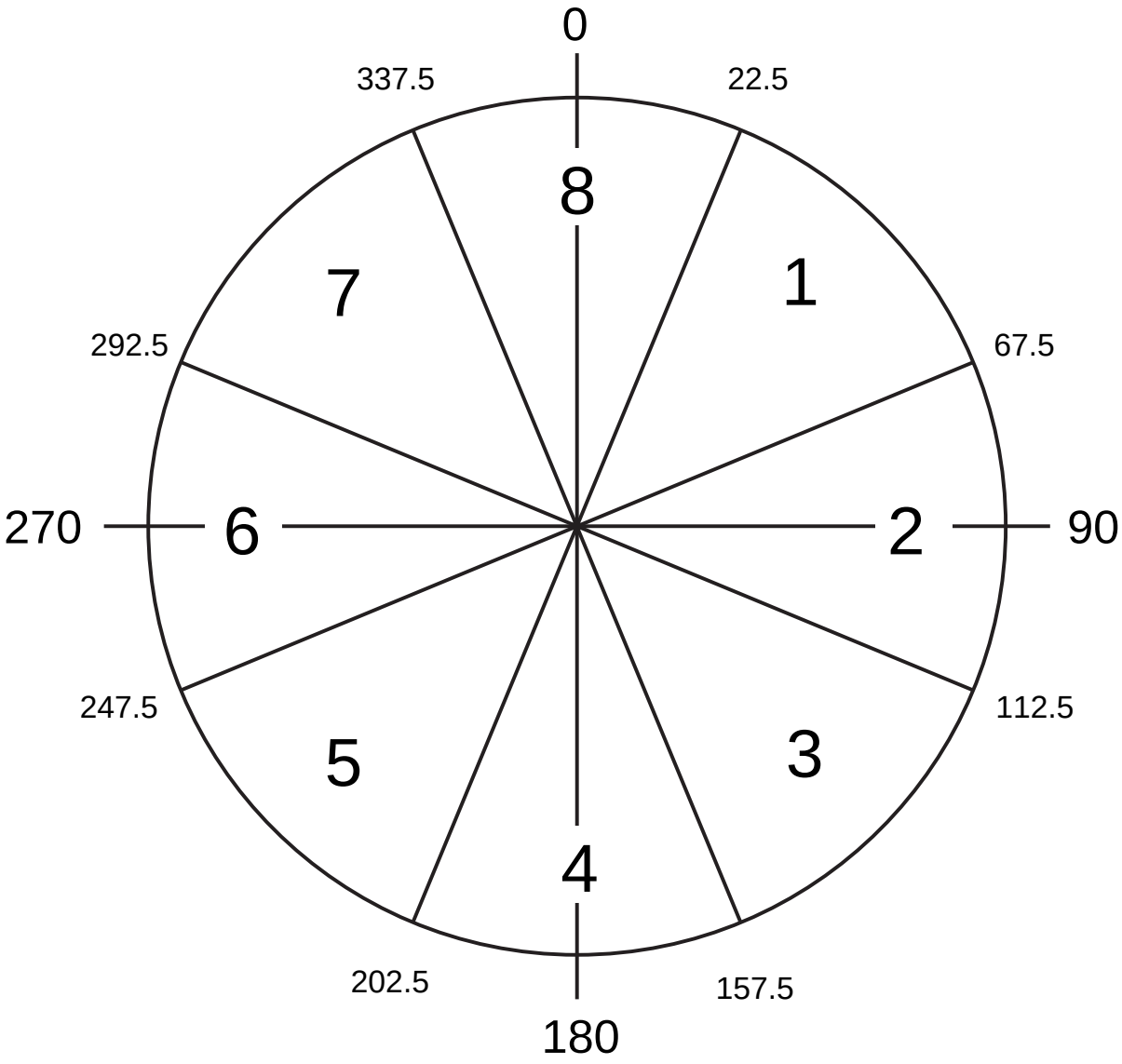
*1 : “01” → “C”, “03” → “E”

Using method:

1) The past self-diagnosis codes are displayed at page: 7, address: B0 to C6. Refer to “SELF-DIAGNOSIS FUNCTION” for detail of the self-diagnosis code.
   Note: This data will be kept even if the cabinet (R) assembly (VC-341 board CN005 (22P)) is removed.

FOR CAMERA OPTICAL AXIS ADJUSTMENT

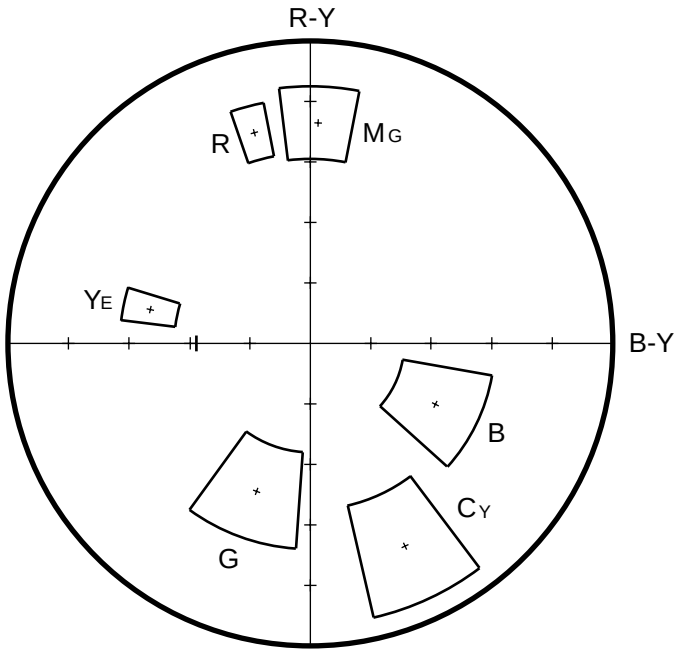
Take a copy of CAMERA OPTICAL AXIS FRAME with a clear sheet for use.



FOR CAMERA COLOR REPRODUCTION ADJUSTMENT

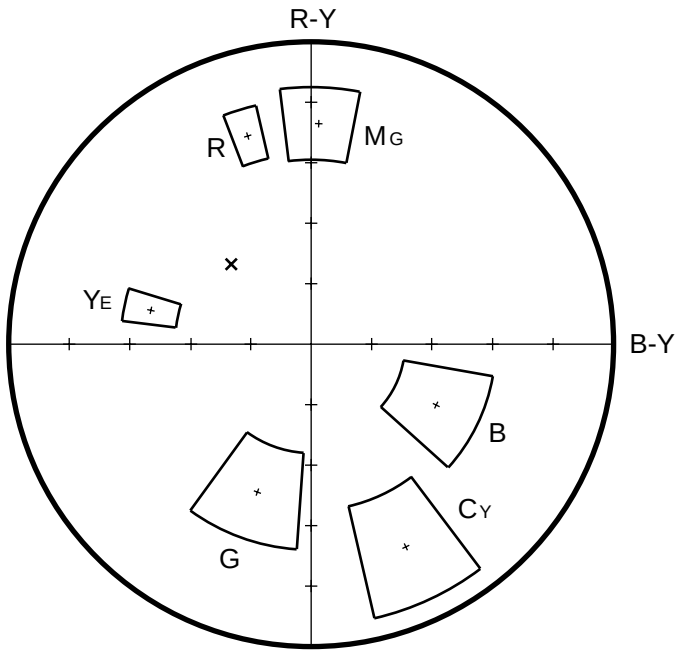
Take a copy of CAMERA COLOR REPRODUCTION FRAME with a clear sheet for use.

For NTSC model



CCD-TRV128/TRV228/TRV328/TRV428

For PAL model



CCD-TRV228E/TRV428E

Revision History

Ver.	Date	History	Contents	S.M. Rev. issued
1.0	2003.11	Official Release	—	—